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TEXTILE WORLD RECORD

LORD & NAGLE COMPANY · Boston & Philadelphia

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The Textile-Finishing Machinery Co.

17 EXCHANGE PLACE, PROVIDENCE, R. I.

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

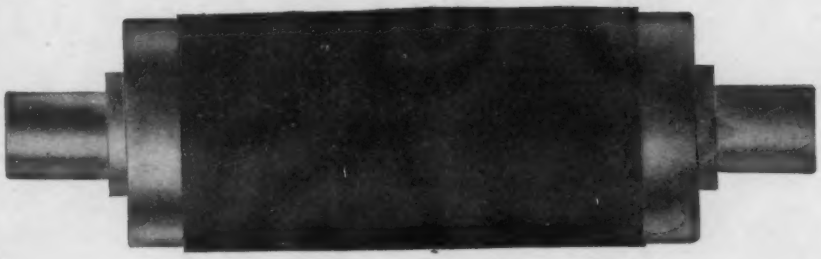
Mercerizing Machinery for Piece Goods and Yarn in the Warp or Chain

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application.

Southern Agent, STUART W. CRAMER, Trust Bldg., Charlotte, N. C., Equitable Bldg, Atlanta, Ga.

Calender and Mangle Rolls



COTTON

PAPER (LINEN, COTTON OR MANILLA)

FELT PAPER

COMBINATION (COTTON AND HUSK)

COMBINATION (COTTON AND EXCELSIOR)
PATENTED

HUSK

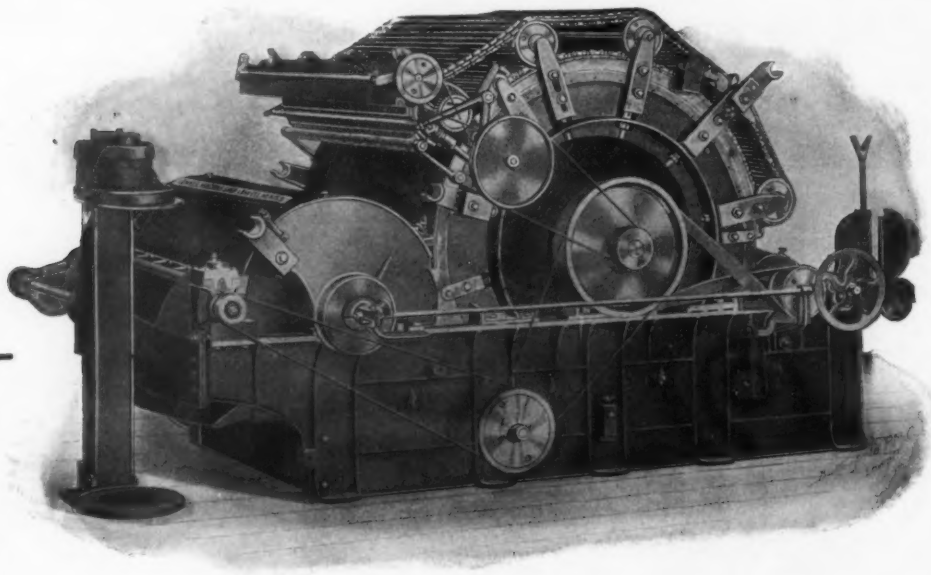
FIBRE

BRASS CHILLED IRON RUBBER

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

BLEACHING, DYEING, DRYING AND FINISHING MACHINERY FOR SILK, COTTON AND WORSTED FABRICS.



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

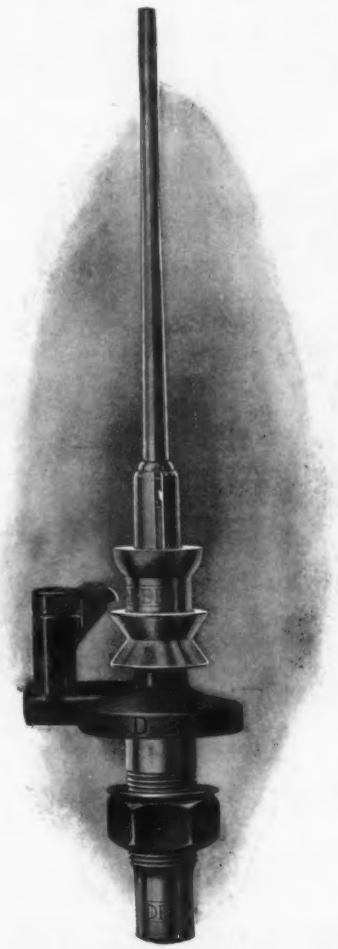
Worsted Machinery: Spinning Frames with caps, rings or flyers, Dandy Rovers and Reducers, Cone Second Finishers, Reducers and Rovers, Gill Boxes for Drawing, Preparing and Finishing, Weigh Boxes and Drawing Boxes, Cap Trap, Flyer and Ring Twisters.

Plans, Specifications and Estimates furnished upon application.

Lowell Machine Shop

LOWELL, MASS.

A New Spindle Improvement



The Rabbeth Centrifugal Bobbin Clutch.

Fits the Bobbin loosely when at rest—allows considerable variation in fit.

Bobbins will all go down into place and Traverse can be lengthened.

Allows easier and quicker doffing — stronger bobbins — less reaming.

Draper Company, Hopedale, Mass.

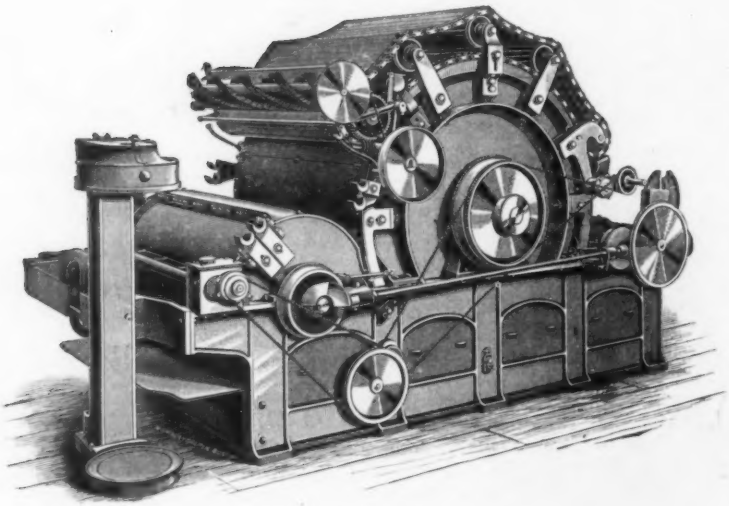
We Also Build Looms.

Cotton Machinery

MASON MACHINE WORKS,

TAUNTON, MASS.

Southern Office,
Charlotte,
N. C.



Cards,
Combers, Railway
Heads, Drawing Frames
Spinning Frames, Mules and Looms

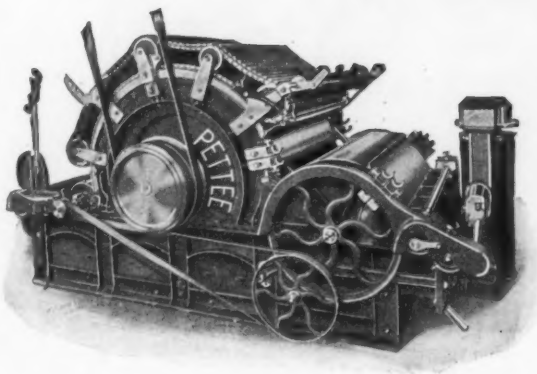
INCLUDING

Plain and Fancy Silk Looms

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



Pickers,
Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

Shops—

Biddeford, Me.

Newton Upper Falls, Mass.

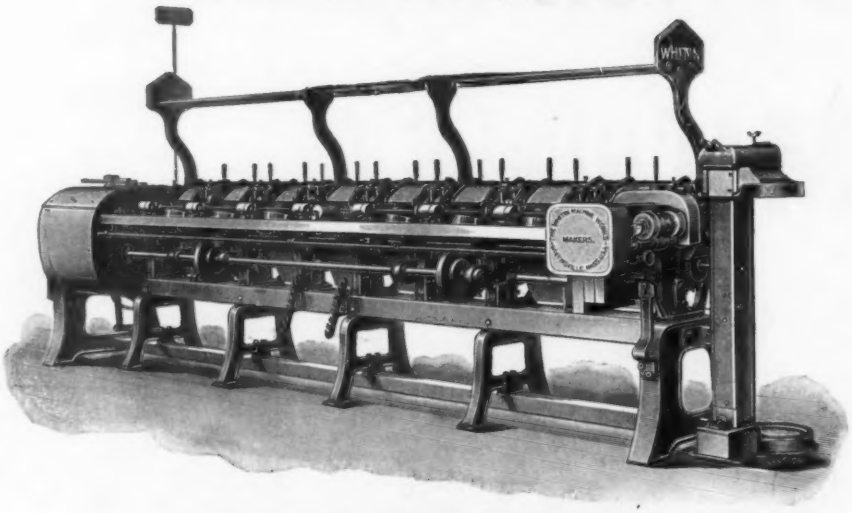
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



HICH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

Southern Agent,
S. W. CRAMER

Trust Building, CHARLOTTE, N. C.
Equitable Building, ATLANTA, CA.

"Kitson Products"

Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
formerly built by

WHITEHEAD & ATHERTON, . Lowell, Mass.
ATHERTON MACHINE CO., - - Lowell, Mass.
A. T. ATHERTON MACHINE CO., Pawtucket, R. I.

Kitson Machine Shop

Lowell, Mass.

SCOTT & WILLIAMS

2079 E. Cumberland Street, Philadelphia, Pa., U. S. A.

BUILDERS OF

Full Particulars, Samples nnd Special Catalogues on Application.

Rib Knitting Machinery for Underwear and Hosiery

Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

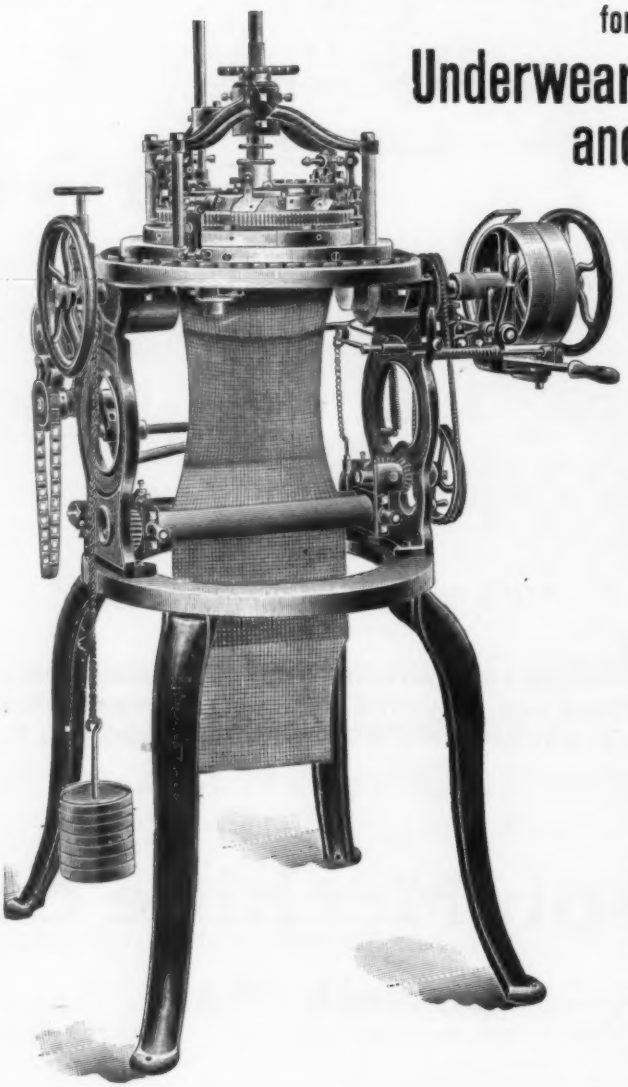
Improved Measuring Device, by actual length knit.

Sizes 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, 4 to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters, etc.



The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Automatic and 7-8 Automatic Seamless Hosiery Machinery.

OUR NUTAPER CONE TUBE

has more taper than any other. Knitting concerns that have tried it declare the delivery perfect, and many, who spin their own yarn, have given us orders for full equipments of No. 50 self-oiling winders.

High speed machines for all classes of winding made with interchangeable parts throughout.

Universal Winding Co., Boston.

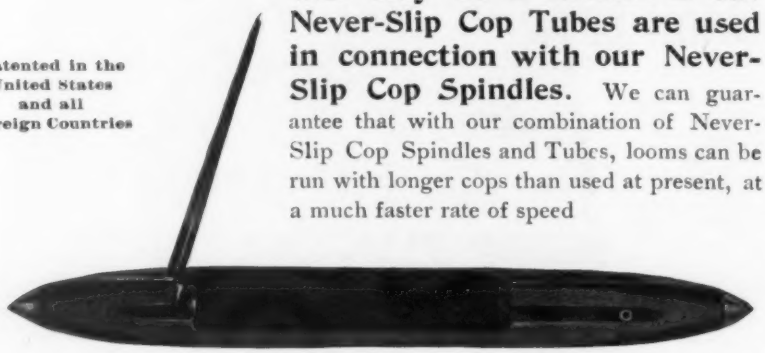
Shuttles for all Textile purposes and Sundry Special Loom devices

Never=Slip Cop Spindles and Tubes

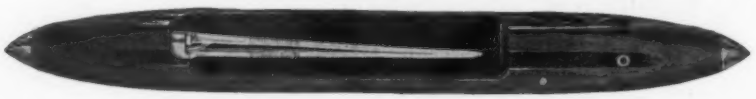
Never-Slip Cop Tube
Patent applied for

Patented in the United States and all Foreign Countries

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed



Shuttle with Spindle Raised
U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending



Shuttle with Spindle Lowered.
U. S. Patents: 778851, Jan. 3, 1905; 79611, May 23, 1905; other patents pending

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NEAR MOTT AVENUE SUBWAY STATION

Electric and Automatic
Warp Stop Motion for Silk, Wool and Cotton
Simplicity! Perfection!

EVAN ARTHUR LEIGH

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SOLE AGENT

IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
Platt's Special Machinery for Making French Worsted Yarns.
Platt's Woolen and Worsted Carding Engines, Special Designs.
Platt's Cotton, Cotton Waste, Woolen and Worsted Mules.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery.
Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

JOSEPH SYKES BROS.,
Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S,
Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'.

Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

Jacob K. Altemus is

Able to supply the best

Cop Winding Machinery

Or Hosiery Winders and more in particular

Bobbin Winders,

Keep in mind that I

Always produce machines that are right

Letting nothing go out

That is not satisfactory before delivery.

Every

Manufacturer should investigate warping and beaming machinery, warp splitting as well,

Upright Spoolers, Quillers, Warpers, Twisters, etc.

Send for full information and prices.

The Greatest Bobbin Winder for Skeins Ever Built.

Textile Machinery

2824 N. 4th St., Philadelphia, Pa,

THESE

Water Towers

Are furnished by

Tippett & Wood

They provide a storage for water under pressure, and are valuable for fire protection and personal uses

The T. & W. Towers do not fall or leak.

All Sizes Built

Plans and prices given on application.

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Phillipsburg, N. J.

HARWOOD'S MACHINERY

Increases Production, Improves Quality, Decreases Labor Cost.

THE BRAMWELL SELF-WEIGHING FEEDER,

For Woolen, Worsted, Hosiery and Shoddy Cards and Garnett Machines.

We began introducing this feeder more than twenty years ago and its use is now practically universal. Many other types and makes have been tried and discarded, but the Bramwell, in its improved and up to date form, is now recognized everywhere as the most perfect feeder and only complete feeding machine in the world.

Our long experience has proved conclusively that where evenness is required—determined by weighing—our weighing feature is absolutely indispensable. Several attempts have been made to introduce feeding machines ignoring this principle, but none have succeeded.

We have made a careful study of all phases of the feeding problem and by adaptations and modifications of the Bramwell Feeder to meet the particular conditions, are prepared to feed evenly all kinds of stock from rabbit's fur to jute tow, including shoddy, cotton, fine wool, mixtures, fine and coarse worsted, flax tow, long worsted and all other kinds of stock.

THE APPERLY FEEDER,

For Second Breaker and Finisher Cards.

This machine was originally brought to this country and introduced against great opposition by the founder of this concern, the late Geo. S. Harwood. Today there are about 15,000 machines of our construction running in this country and Canada. We have greatly improved the machine. It is today an efficient, positive and up-to-date feed, and we can offer manufacturers the choice between the KEMP POSITIVE GEARED TRAVELER and the STANDARD TRAVELER with all other recent improvements.

THE BRAMWELL PICKER FEED,

For Burr Pickers, Mixing Pickers, Fearnaughts and Lumpers.

We consider our improvements in picker rooms of the utmost importance for up-to-date manufacturers. In fact, wide awake manufacturers are more and more realizing the wisdom of bringing their stock to the card room in a better state of preparation. Hand feeding is becoming a thing of the past in the picker room as in the card room. The latest Bramwell Picker Feed is built to handle all kinds of stock in any quantity with evenness and without injury to the staple.

THE SPENCER AUTOMATIC STOCK OILING MACHINE.

This is a modern device for oiling the stock automatically on its way to the picker from the BRAMWELL PICKER FEED, superseding the wasteful, dirty method heretofore in use. Because of the accuracy of this method and the fact that the oil goes on the stock only (instead of the floor and walls) there is a large saving of oil, and the stock is at the same time more evenly oiled and much better prepared for the carding process.

THE MODERN BRAMWELL FEED FOR WOOL WASHERS AND WOOL DRYERS.

The scouring and drying of stock is today recognized as a very important part of the manufacture of textiles, especially in worsted mills. Our feeds are recognized as the standard for properly feeding stock in the grease or wet stock with absolutely no injury to the staple, with evenness and in sufficient quantity and in the best possible condition for economical scouring. There have been other feeds offered for this class of work, but after clogging up and giving all kinds of trouble most of them are today in the scrap heap, having been replaced with our feeders.

REPAIRS AND IMPROVEMENTS FOR OLD FEEDERS.

We have not been standing still all these years and the feeders we are building today are modern and up-to-date but these improvements and attachments can be placed on older feeders of our construction, greatly to their benefit. We do not hesitate to claim that **no outlay will show a greater return** to a manufacturer than money spent in bringing your Bramwell and Apperly Feeds thoroughly up-to-date.

APRONS OF ALL KINDS FOR BRAMWELL FEEDERS.

We build about thirty different styles of spike aprons adapted to the various kinds of stock BRAMWELL FEEDERS are called upon to handle. Our policy is and will be to put into our aprons the best materials and workmanship money can buy. We know we could make cheaper aprons by using cheaper materials and less expensive labor and it would take manufacturers some years to find us out. The apron would LOOK nearly as well but would WEAR only two or three years, instead of from five to ten or twelve. Do not trust the man who says he can sell you aprons cheaper than we can. He can do it (and so could we) but you pay the bill in the end. The best is none too good and is the cheapest in the long run.

Call on us for particulars and information about all matters relating to Feeding Machinery.

GEO. S. HARWOOD & SON,

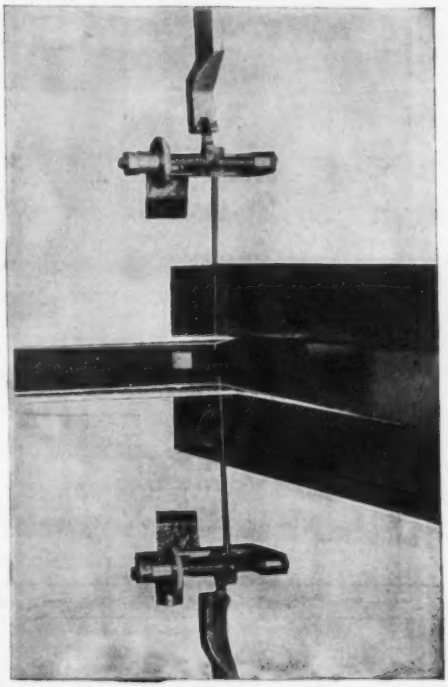
53 STATE ST., BOSTON, MASS.

The Barber Warp Tying Machine

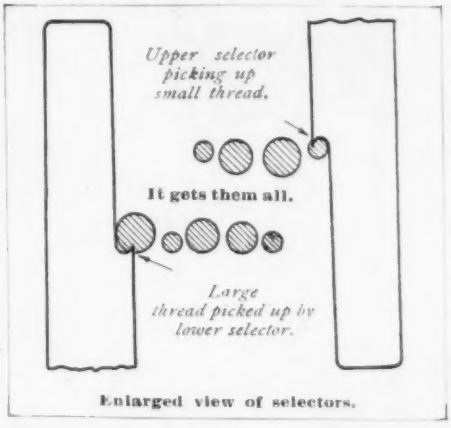
Ties old to new warp ends perfectly—10,000 knots hour by hour.

The way this machine picks up a thread from each warp, brings them together, ties them, pulls the knot tight, trims off the ends and removes the clippings is almost human. Perfect knots are made at a speed of 250 knots a minute. This means better work, increased output, reduced cost and the elimination of drawing-in troubles not the least of which is the difficulty of securing and keeping competent help for this extremely trying work. The betterment of mill conditions effected by the Barber Warp Tying Machine is worth careful consideration. Its use gives the superintendent control, enabling him to keep every loom up to its full capacity, a condition of affairs quite in contrast with methods in vogue in many mills where the lack or absence of a few drawers-in keep the looms idle, restricting production, causing general dissatisfaction and a very considerable loss. The Barber Warp Tying Machine handles all kinds and any number of harnesses. It is so nearly automatic that any good weaver can learn to operate it in a very short time. Look it up for *your mill.*

Machine in operation at our salesroom — *you* are invited to see it.



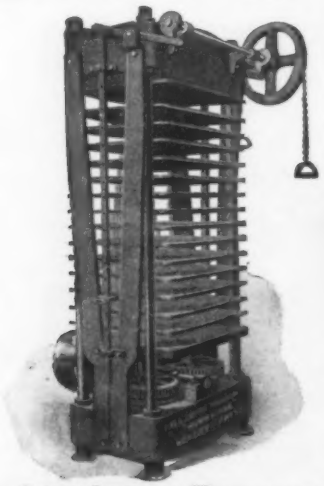
Selectors picking up the threads from old and new warps.



Enlarged view of selectors.

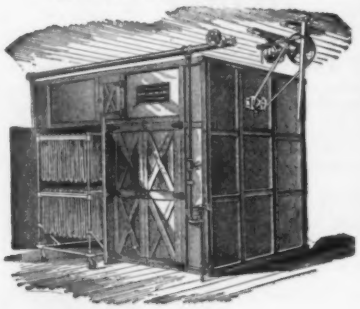
Barber-Colman Co., 77 Washington St. (North) **Boston, Mass.**

"HURRICANE" DRYERS AND FANS



Power Screw, Hydraulic and Lever **Presses**

For Wool, Cotton Stock, Yarn, Stockings, Underwear, Etc.



Truck Yarn Dryer.

BELT DRIVEN AND MOTOR DRIVEN

"Hurricane" Fan, Style No. 2. Write for Catalogues.

COMPLETE EQUIPMENTS FOR DYEING, SCOURING, BLEACHING, CARBONIZING, OXIDIZING, CHROMING, Etc.

PHILADELPHIA DRYING MACHINERY CO.

6721 Germantown Ave., Philadelphia, Pa.

The Jackson Belt Lacer

will lace a 6-inch belt complete in less than three minutes.

How nearly can you duplicate this by any other method?

It costs a cent to lace a 5-inch belt; larger belts in proportion.

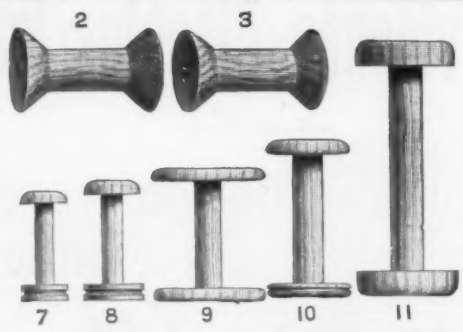
We use coil wire lacing; the belt can be connected or disconnected, shortened or lengthened in a few seconds, and the joint is just as pliable as any other part of the belt.

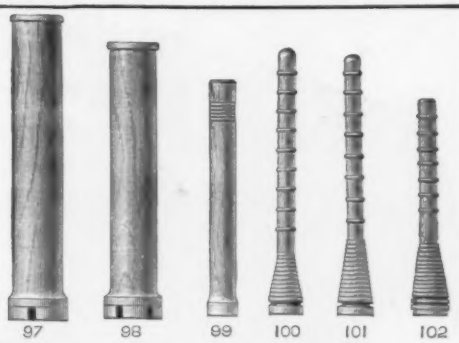
1,900 lbs. tensile strain has failed to break it or pull it apart.

Isn't it worth investigating?
Send for catalog.

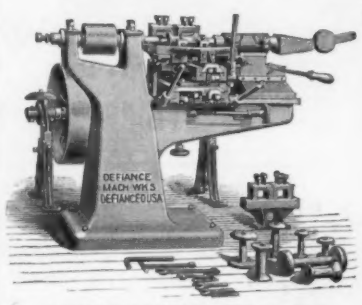
Birdsboro Steel Foundry & Machine Co.

Birdsboro, Pennsylvania.



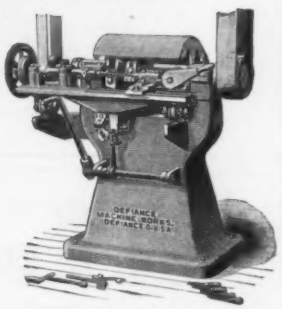


SPOOL AND BOBBIN MACHINERY



AUTOMATIC SPOOL TURNING LATHE

Complete Equipment
OF THE
MOST MODERN TOOLS
25% SAVED
Over the Old Methods
Send for Catalogue and Particulars to
THE
Defiance Machine Works,
DEFIANCE, OHIO



AUTOMATIC BOBBIN LATHE

Fairbairn Lawson Combe Barbour, Ltd.

Lawson Branch

Hope Foundry. **Leeds, England**

MAKERS OF MACHINERY FOR

Preparing and Spinning

Flax, Hemp, Tow and Jute

Special Machinery

for the Manufacture of

Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

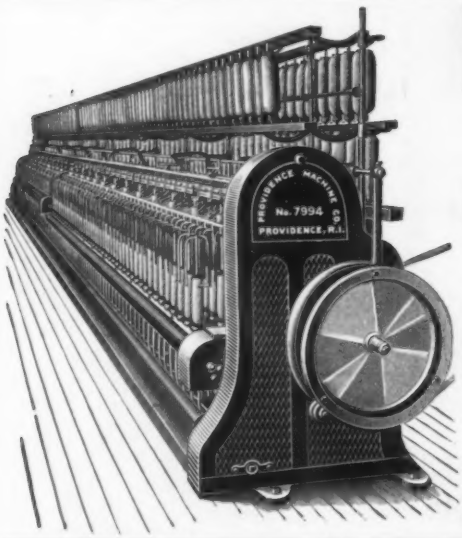
Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.



Providence Machine Co.

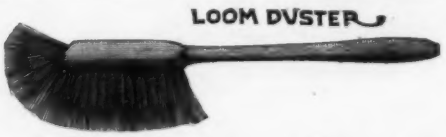
Manufacturers of

Improved Cotton Roving Frames

Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

An Essential to the Weave Room



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S. A. FELTON & SON CO. MANCHESTER, N.H.

The Loom Duster

Key Seating Attachment

FOR

Whiton Gear Cutter

We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

THE D. E. WHITON MACHINE CO.,
19 Oak Street, New London, Conn.

THE L. M. BOWES COMPANY,

Every Description of Fine Leather for Textile Use.

SOLE AGENTS IN THE UNITED STATES FOR

CHARLES CAIN, SON & GREENWOOD,

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MAKERS OF HIGH GRADE

CARD CLOTHING

For Cotton, Woolen, Worsted and Silk.

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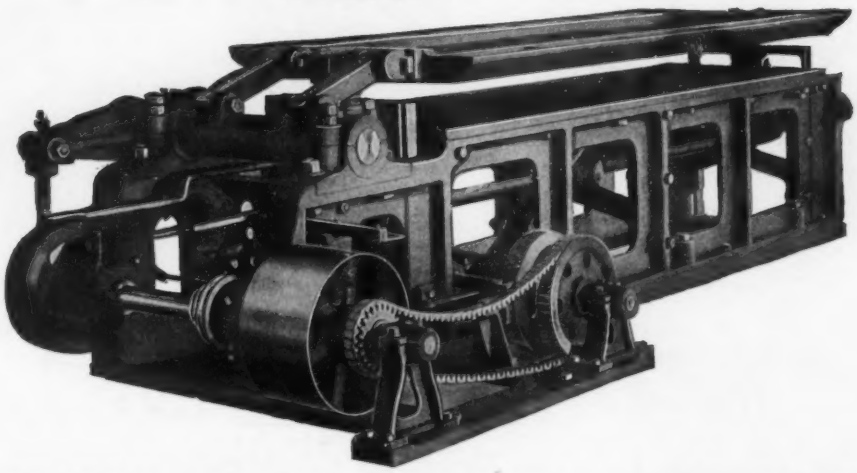
Farrel Foundry & Machine Co.

ANSONIA, CONN.



SINGLE AND DOUBLE FELT HARDENERS.

Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
Machine Moulded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

CHARLES S. BARTON, Pres. and Treas.
GEORGE S. BARTON, Secretary.

Established 1837.
Incorporated 1867.

Rice, Barton & Fales Machine and Iron Company.

MANUFACTURERS OF

Printing Machines

From ONE to FOURTEEN COLORS,
for ALL KINDS OF FABRICS.

ALSO

Duplex Printing Machines, | Forcing Machines,
Color Kettles, | Copper Printing Rollers,
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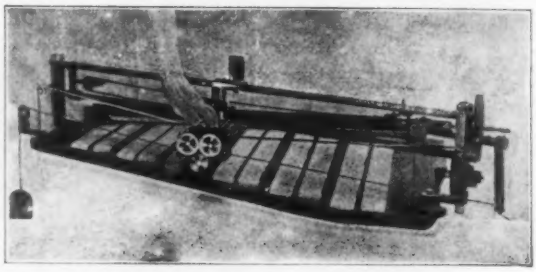
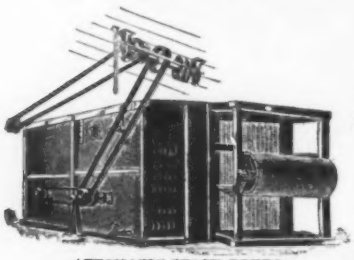
WORCESTER, MASS., U. S. A.

"20th CENTURY" MACHINERY

Dryers for Wool and Cotton Stock, Yarn, Stockings and Underwear. Carbonizers, Ventilating Fans, Yarn and Wool Scouring Machines, Cloth Washing and Dyeing Machines, Tom Toms, Chroming Oxidizing Machines.



WEB FEED.



AUTOMATIC STOCK DRYER.

We also manufacture Kershaw's Geared Traveler and Improved Web Feed.

Garnett Machines and Pickers.

We Recloth or furnish New Metallic Toothed Cylinders and Feed Rolls.

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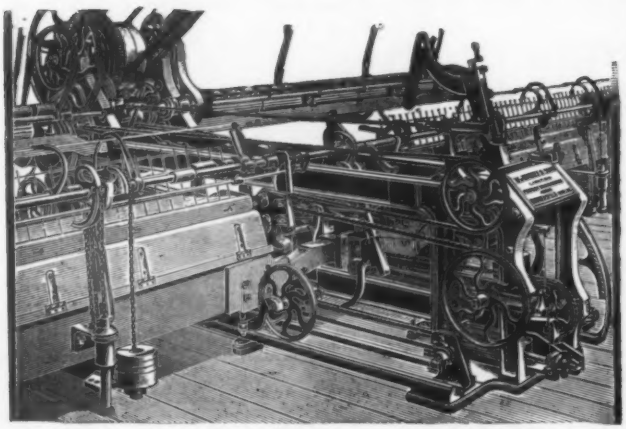
Telegraphic Address: "WHITELEY, HUDDERSFIELD." Nat. Telephone, 598 and 599.

Wm Whiteley & Sons Ltd

LOCKWOOD, HUDDERSFIELD.



SELF-ACTING MULE.

Makers of all descriptions of Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines,

Hydro Extractors. Warp Sizing.

Cool Air Drying and Beaming Machines.

Warping Mills with Patent Sectional Dividing Apparatus.

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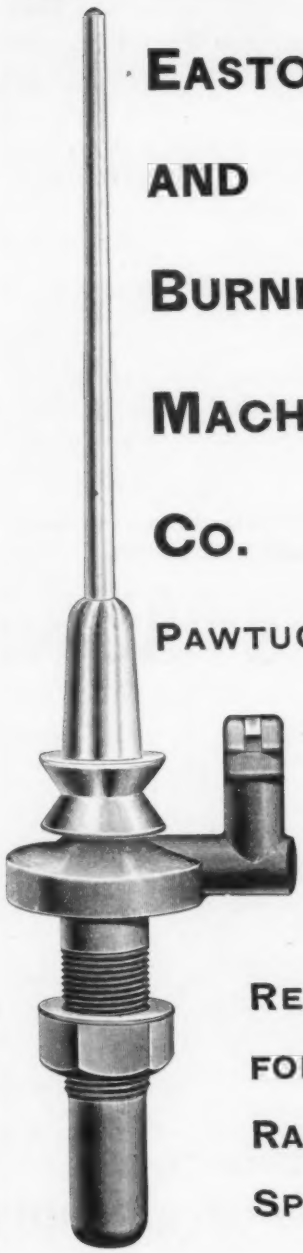
Second-hand Tentering Machines in good repair at low prices.

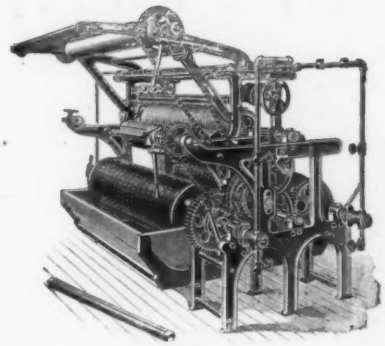
SPINDLES



EASTON
AND
BURNHAM
MACHINE
CO.

PAWTUCKET,
R. I.

REPAIRS
FOR
RABBETH
SPINDLES



We build our

Steam Finishing Machine

with

Four Brushes

Two Brushes or only One Brush
as desired

PARKS & WOOLSON MACHINE CO
Springfield Vermont

Exhaust Fans

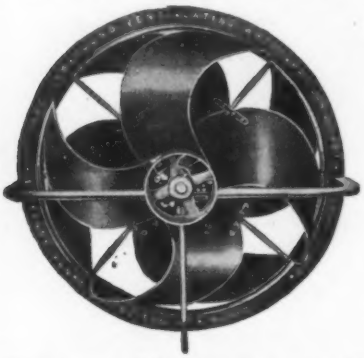
Crocker-Wheeler 36-in. Vertical Fan Outfit.
See Bulletin 54-V.

FOR VENTILATING AND FOR REMOVING STEAM FROM THE DYE HOUSE.

Crocker-Wheeler Company,
Ampere, N. J.

COMPOUND—THAT'S WHY

Barney Compound Ventilating Fans Ventilate, Purify, and Dry.



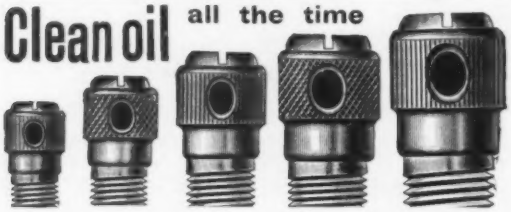
Notice the compound feature—it does the work. They force out all atmosperic impurities and draw in pure air. They often double capacity of drying rooms, expel loose steam from dye houses—preventing condensation, *cool spinning rooms.*

The Barney System is the most economical.

TELL US YOUR PROBLEM.
WRITE TODAY. FREE TRIAL OF FAN.

BARNEY VENTILATING FAN WORKS, 24-28 Binford St., Boston, Mass.

Clean oil all the time



on every bearing by using
Dust Proof Oil Hole Covers

No repair bills, no shut downs from hot bearings. Every machine running smoothly and easily every hour of every day. Specify D. P. O. H. Covers if you buy and put them on if you build, 'twill pay.

Postal will bring Samples and Catalog.

W. & C. F. TUCKER, HARTFORD, CONN.

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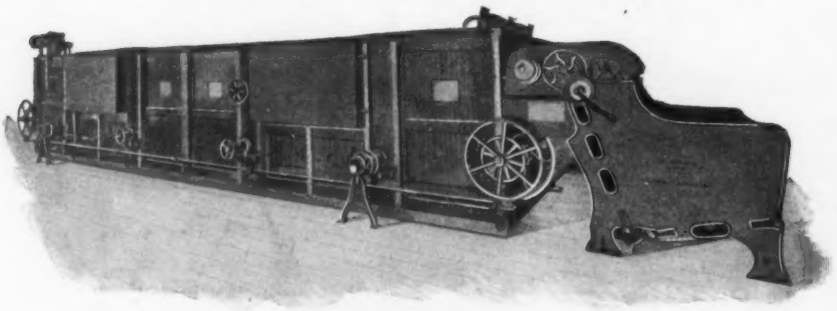

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Stock Dryers, Wool Washers,
Wool Dusters, Carbonizing Plants,
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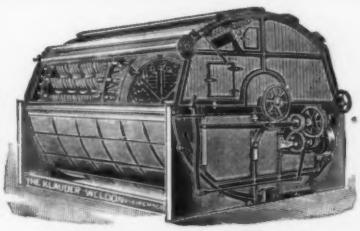
RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTHS' TRIAL
YOU
TAKE
NO
RISK



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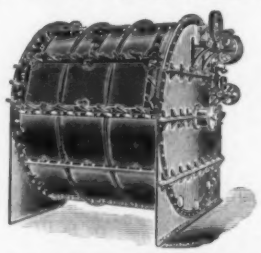
THE KLAUDER-WELDON DYEING MACHINE COMPANY

P. O. Box K, AMSTERDAM, N. Y.

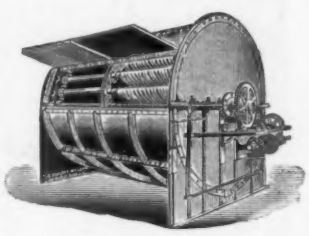
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

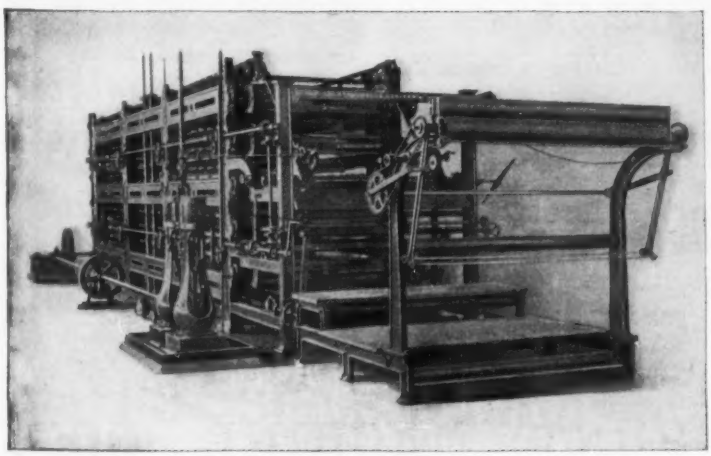
WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

TENTERING AND DRYING MACHINES

WITH LOW DOWN FEED. **PATENTED FEBRUARY 26, 1895.**



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods. Hot Air Drying and Tentering Machines.

Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (Double or Single), Dewing Machines, etc. Crabbing Machines for worsted. Made either single, double or triple.

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D. R. KENYON & SON, Raritan, N. J. Successors to KENYON BROS.

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TURBINE WATER WHEELS

HUNT-McCORMICK

Cylinder or Balance Gate Casing

Least Water,
Greatest Power,
Uniform Speed

Complete Equipments

We make Special Designs to meet TEXTILE MILL conditions.

FLUMES, REGULATORS,
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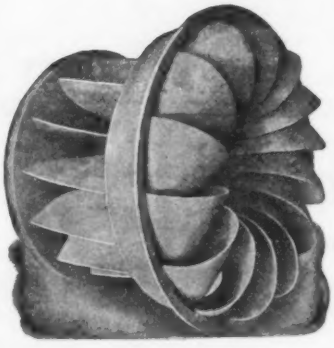
CLUTCHES, HANGERS, ETC.
UNDER-WRITER FIRE PUMPS.



Wet Finishing Machinery

Fulling Mills——Washers
Dyeing and Bleaching Machines
FOR WOVEN AND KNIT GOODS

Dye Tubs—Soap Tanks—Centrifugal Pumps

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Branch Office: 70 Kilby St., Boston. Works: Orange, Mass.

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Metallic Toothing

GARNETT CYLINDERS

FEED ROLLS LICKERINS
BURR ROLLS

Metallic Breasts for Cards

RECLOTHING

of every description of

Metallic Toothed Rolls

An up-to-date equipment in charge of experienced operatives, backed by the reputation of our house, warrants bespeaking your consideration and orders. Try us. It will be up to us to see that you come again.

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BARNSLEY, ENGLAND.

Absolutely secure combination of Shield and Bobbin guaranteed.

Loose Shields Impossible.

Specialties: PATENT "LOCKFAST" and "CLIMAX" Shields. ENAMELLED CONDITIONING BOBBINS, Impervious to Steam, Moisture or Oil.

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GOLD MEDAL St. Louis, 1904. DIPLOMA d'Honneur Liege, 1905. Highest Awards for Bobbins.

Added Strength and Absolute Security.

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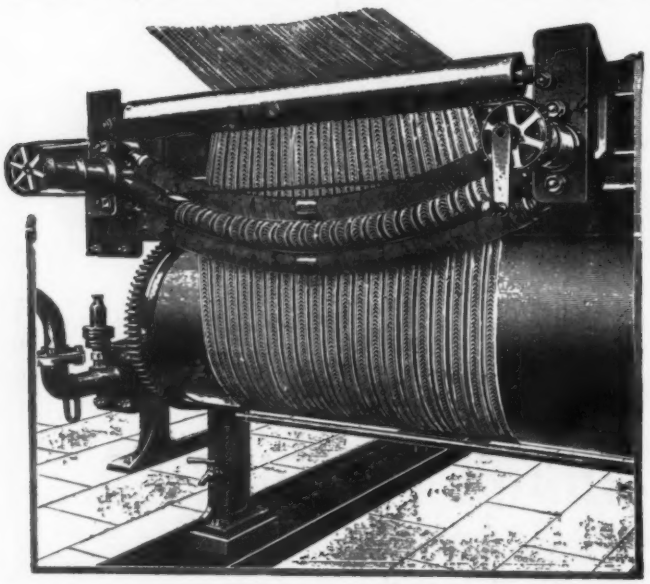
Greatly increase capacity and permanent efficiency of steam turbines.

Power Specialty Company,

BOSTON: 10 Post Office Square. **NEW YORK: 111 Broadway**

A PERFECT CLOTH EXPANDER



The recent invention of Wm. Mycock, an English cotton manufacturer. Hundreds sold in Great Britian and on the Continent. Large bleacheries in this country where it has been placed on trial are delighted with it. Gets the full width of goods, with perfectly even tension both ways. Can be attached to calenders or cans. Put it on trial.

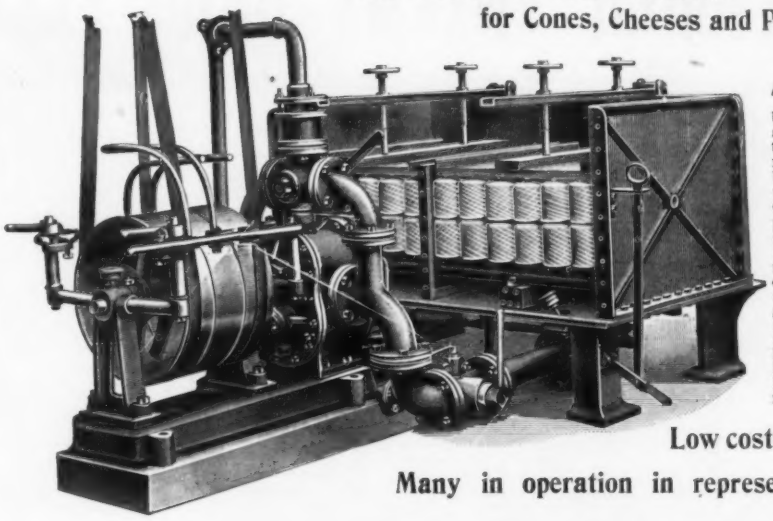
Patented in United States, Canada, Great Britain and Continental countries. Infringements will be prosecuted.

THOMAS LEYLAND & CO., 60 INDIA ST., BOSTON.

Sole Agents for the United States and Canada.

Cross Spool Dyeing and Bleaching Machine

The Latest and most successful for Cones, Cheeses and Parallel Tubes



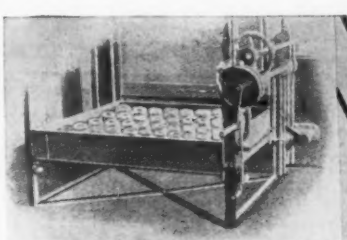
ADVANTAGES:

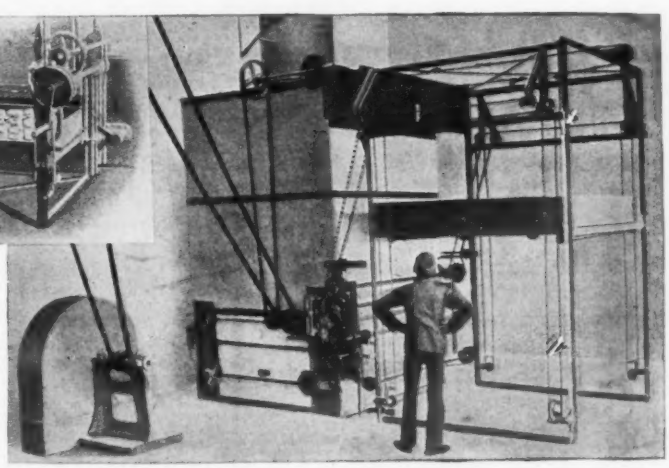
Uniform bleaching and dyeing throughout. Colors requiring several baths dyed without removing bobbins. Good for fast sulphur black and all colors, little dye liquor needed; none lost. Bobbin deformation avoided, consequently good running off. Simple and accurate sampling, large production, little power. Very little attention needed.

Low cost—high quality

Many in operation in representative mills

Tray with Cross-wound bobbins.





A Drying Machine that meets every requirement.

Tray full of material going up to enter dryer at the top.

The air current passes through the material from underneath keeping the material open and soft. The air gets warmer and warmer also dryer as tray descends, and by the time the bottom is reached all the moisture is carried off. Movement of trays is automatic. Enhances the value of the material dried. Large productive capacity. Occupies but little floor space. Economical, simple and easy working. Write for full particulars.

L. H. A. Schwartz & Co. 141 Milk St., Boston

Sole and direct agents for R. & O. Lindemann's Egyptian Cotton

East Indian and American Cottons

German Textile Machinery Specialties

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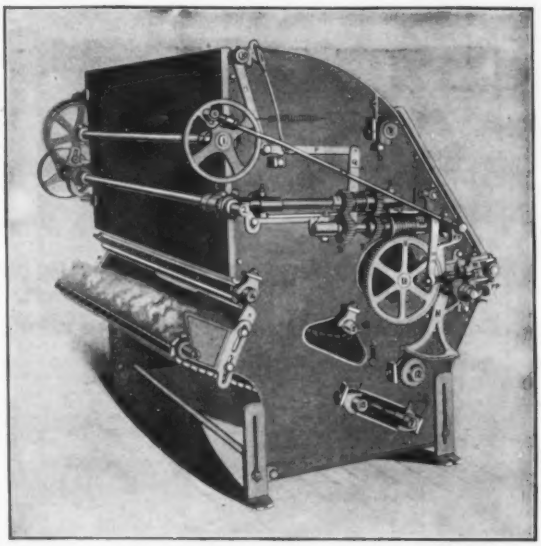


Write Us For List of Mills Where Machines Are Used.

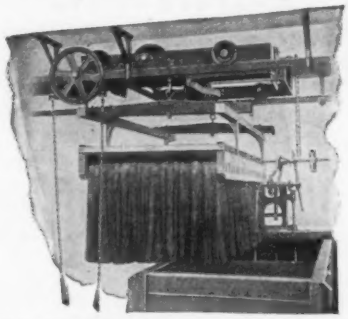
Woonsocket Machine and Press Company

WOONSOCKET, R. I.

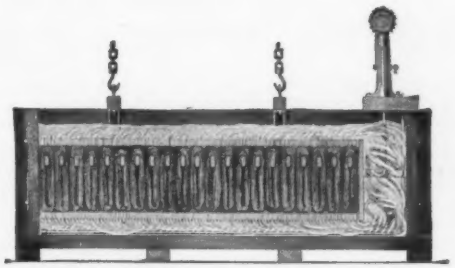
The Hussong Dyeing Machine

Patented Nov. 6, 1900. April 9, 1901. Nov. 29, 1904. June 5, 1906.

THE ONLY MACHINE THAT WILL DYE SUPHUR BLACK SUCCESSFULLY.



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine suspended.



Longitudinal Sectional View, showing the circulation of dye-liquor through the yarn when in operation

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff,
Saving of 75% in Labor, Makes No Waste Whatever, No Friction on the Material.
Requires but Little Power to Operate.
Leaves the Yarn and Slubbing it its Natural Condition.

Built by the American Dyeing Machine Co. Office 609 Pearl St., Camden, N. J.

BEWARE OF INFRINGEMENTS.

The American

WROUGHT STEEL PULLEY

Patented in the United States and Foreign Countries.

SEND FOR BOOKLET.

Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly — keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.

Sold by the Leading Supply Houses all over the WORLD.

The American Pulley Co.,

29th and Bristol Streets, : : PHILADELPHIA, PA.

WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

WILLIAM FIRTH CO.

Post Office Square Building 79 Milk Street, BOSTON, MASS.

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ASA LEES & CO., Limited,

TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

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LOCKETT, CROSSLAND & CO., Engravers and Builders of Leather Embossing Machinery, etc., etc.

R. CENTNER FILS, Heddles.

GOODBRAND & CO., Yarn Testing Machinery, Wrap Reels, etc.

JOSHUA KERSHAW & SON, Roller Skins, etc.

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BRADFORD STEEL PIN CO., Comber Pins.

CLAPHAM, SMITH & CO., Caps, Tubes and Spindles for Worsted, etc.

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JOSEPH SYKES BROS., Hardened and Tempered Steel Card Clothing for Cotton.

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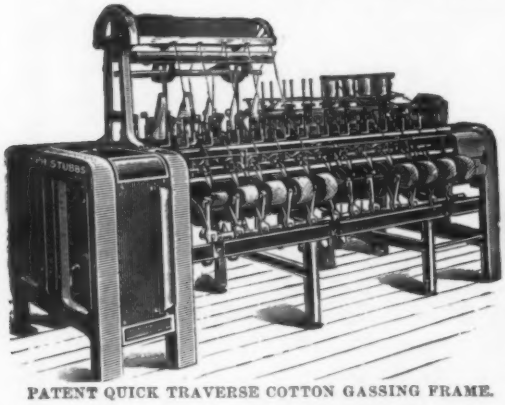
PICK GLASSES, LEATHER APRONS, PATENT WIRE CHAIN APRONS.

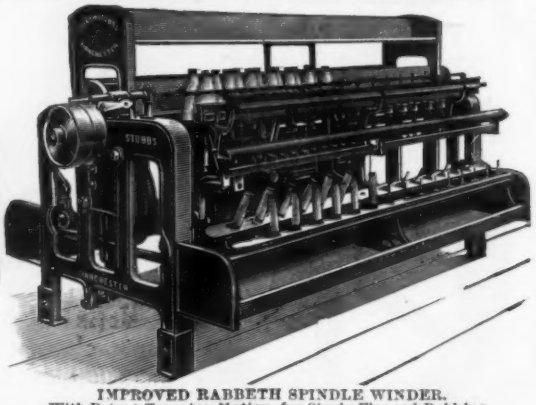
JOSEPH STUBBS - - Manchester, England.

SPECIAL MACHINERY

For Winding, Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



IMPROVED RABBETH SPINDLE WINDER.
With Patent Tapering Motion, for Single Flanged Bobbins.

Sole Agents for the United States and Canada.

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DOBBINS' ELECTRIC SOAP, ABSOLUTELY PURE AND UNIFORM.

Dobbins' Hard Water Soap, a Specific for Hard Water or Water Charged with Chemicals.

AMMONIATED POTASH SALTS FOR SCOURING.

Dobbins' Palm Oil Fulling Soap. Dobbins' "Fast Black" Soap. Pure Olive Oil Potash Soaps.

FREE SAMPLE SENT FOR TRIAL ON REQUEST.

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WILLIAM FIRTH, Pres. THE FRANK B. COMINS, Treas.

AMERICAN MOISTENING COMPANY

79 Milk Street, Boston, Mass.

Received the HIGHEST AWARD on recomendation of the FRANKLIN INSTITUTE for

"Simplicity and Originality of Design."

Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty years receiving the HIGHEST AWARDS in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

The Only Perfect System of Air Moistening

And Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for Booklet "T" on Humidification. Legal Proceedings will at once be taken against infringers and users of infringements.

J. S. COTHRAN, Southern Representative, Empire Bldg., **ATLANTA, GA.**

Eureka Fire Hose

THE BEST FIRE HOSE MADE.

(Trade Mark.)

For use in

Cotton Mills, Woolen Mills and Factories.

Seamless Woven and Rubber lined EUREKA COTTON HOSE, has no equal. Send for circular and testimonials.

Awarded Gold Medal at the St. Louis Exposition, 1904.

EUREKA FIRE HOSE CO.
13 Barclay St., New York, N. Y.

Our Automatic Roving Can Spring

Made of fine quality spring wire adjusted to the same tension. The plate or follower is made of IXXX tin plate with rounded edges, avoiding all wear on the sides of the can. A half inch hole in the center of the plate prevents suction. The spring for satisfactory service.

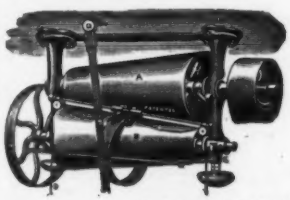
Write for prices.

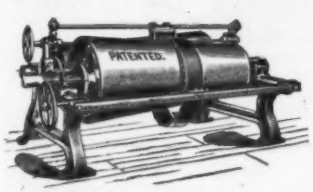
James Hill Mfg. Co.,
Providence, R. I.

EVANS' FRICTION CONES.

Eight Thousand Sets in Operation in This Country and Europe.

A partial list of manufacturers who have Evans' Friction Cone Pulleys in operation, transmitting from ONE TO FORTY HORSEPOWER: National Biscuit Co., Richmond, Ind., 300 sets. Merrimack Mfg. Co., Lowell Mass. 20 sets. Arnold Print Works, No. Adams, Mass. 11 sets. John & James Dobson, Philadelphia, Pa., 34 sets. Stinson Bros., Philadelphia, Pa., 40 sets. Frederick J. Falding, New York, N. Y., 20 sets.





Smith & Winchester Co., So. Windham, Conn. 250 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 275 sets. Pacific Mills, Lawrence, Mass., 13 sets.

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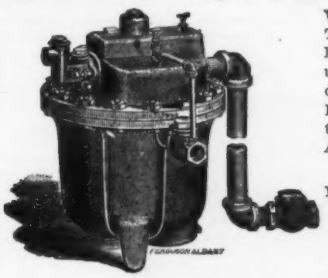

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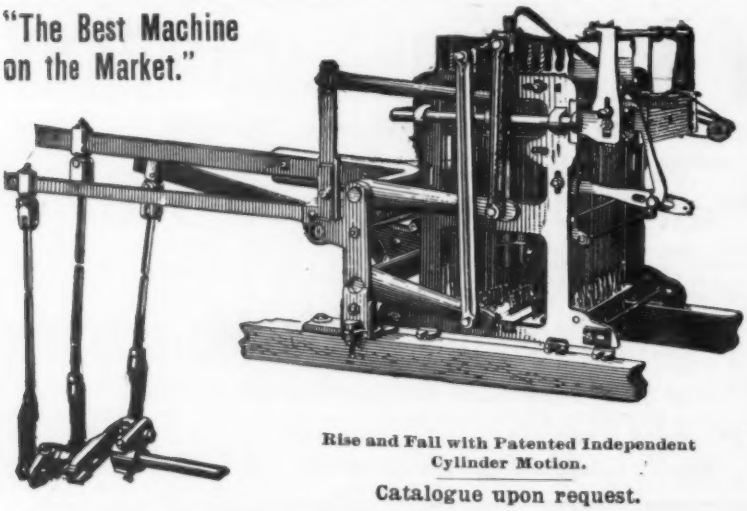

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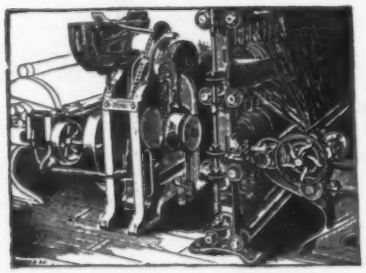

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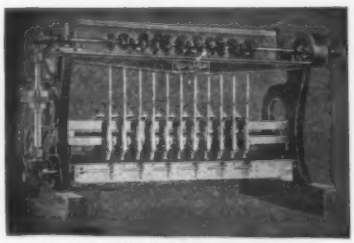

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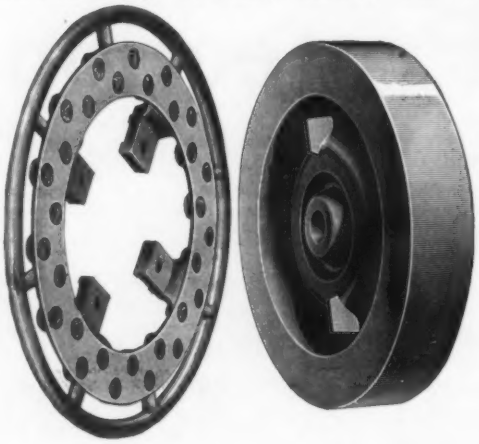

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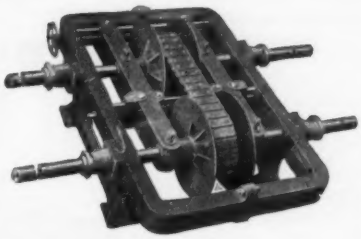

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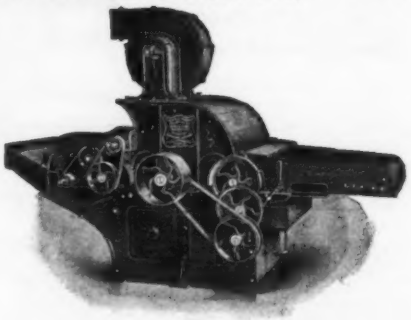

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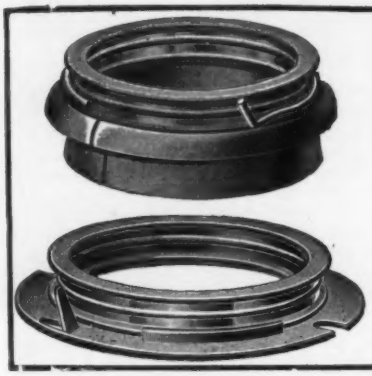

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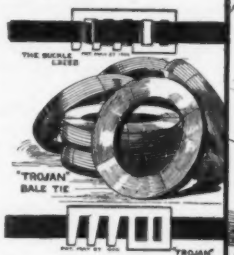

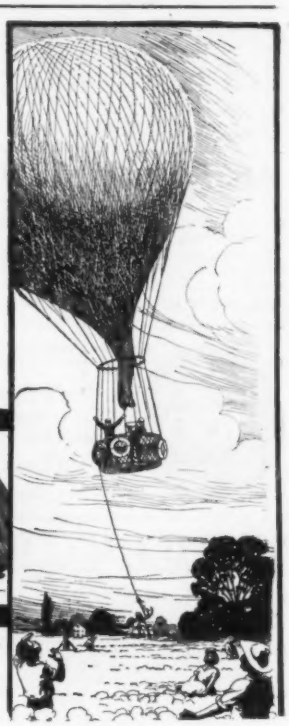

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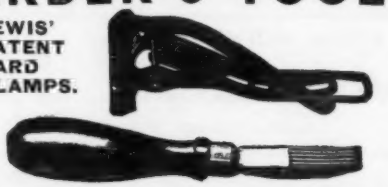

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OUR SPECIAL OFFER, a Sample Can of Albany Grease with an Albany Grease Cup free of charge or expense for testing. Always give the name of concern. The only information necessary to send is pipe connection in bearing, DEPTH OF OIL HOLE FROM TOP OF TAP TO JOURNAL, and give particular part of machinery on which the same is to be used.

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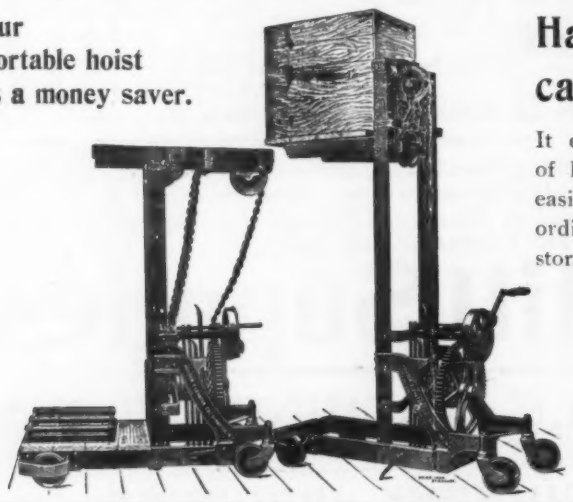

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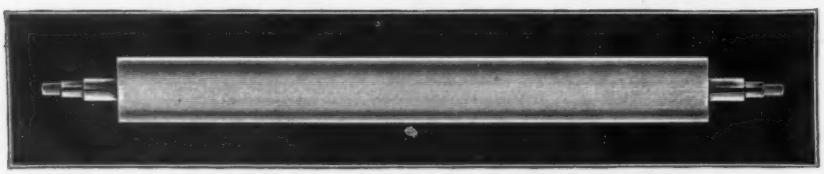

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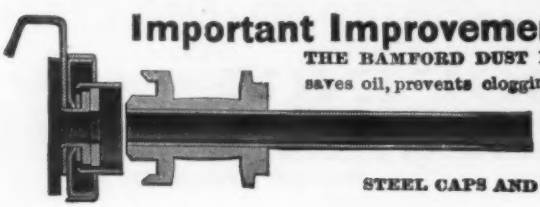

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ALSO MFRS. OF

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Because:—

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3. The cells are stationary as opposed to the rotating cylinders, and owing to their construction, their collapse is impossible, whereas the cans used in textile drying are liable to failure from external pressure.

4. The Cell Drier is cheaper than the cylinder drier. There is not only a saving in the first cost of the machine, but there is a further saving in the cost of erecting it and getting it started. There is also a continual saving, as with the Cell Drier there are no journals to pack at intervals.

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6. To sum up; the Cell Drier is simple, compact, efficient, and inexpensive to buy, install and operate.

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And there is no **string** to this method of selling our

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Ask your Dealer, or send us 2c. for testing sample.
Red Label for Leather Belts;
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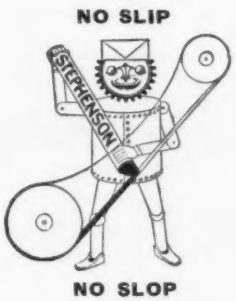
No **one** one kind is good for **all** belts.



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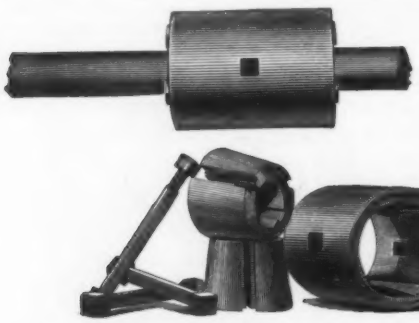
Albany, N. Y.



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DOUBLE CONE VISE COUPLING

has a way of holding shafts together, that no other COUPLING can equal.

WILLIAM SELLERS & CO., INCORPD.

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Makers of

SHAFTS,
COUPLINGS,
PULLEYS,
HANGERS,

and all most approved appliances for the Transmission of Power.

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MACHINE TOOLS.
INJECTORS. POWER CRANES.

An ideal combination

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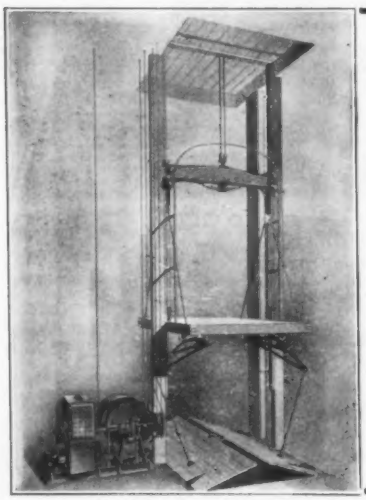

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A New Type at a New Price.

Equipped with steel worm, bronze rimmed gear wheel. Ball-bearing end thrusts. Motor of our own make, designed especially for elevator service.

Costs less than our standard direct electric elevator with as efficient service for these capacities:

2500 lbs. at 55 feet per minute.
(Without trap doors)
2000 lbs. at 75 feet per minute.
1500 lbs. at 100 feet per minute.

Write us about this, and any kind of an elevator.

Morse, Williams & Company,

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NOW READY FOR DISTRIBUTION. SEND FOR COPY

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To secure good results it is absolutely necessary that loop pickers for Northrop and other looms, fit the picker stick. We carry in stock these pickers with three different sizes of stick holes and make other sizes to order if our standard sizes do not fit your sticks.

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Formerly Loom Picker Co.

Geo. W. Gerry & Son, ATHOL, MASS.

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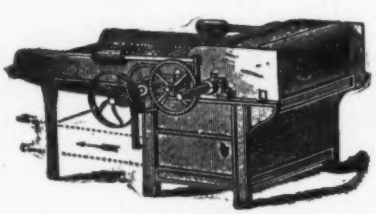

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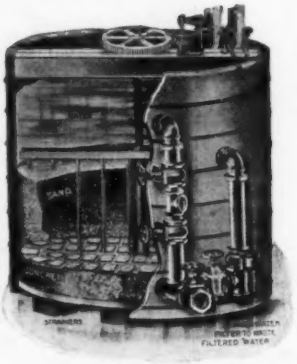
Wool and Waste Dusters,
Rag Dusters, Nappers.
Improved Cloth Measuring Machines.

Lumper and Duster Cylinders Refilled and Repaired.

The United Water Improvement Co.
Pressure and Gravity Filters.

Intermittent and Continuous Water Softening Apparatus, manufactured under the Hungerford System of Water Purification.



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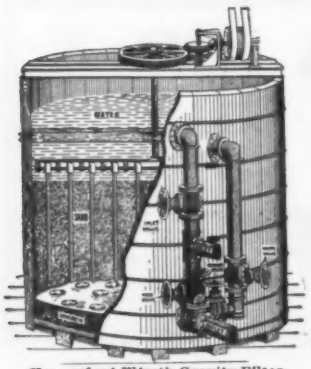

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FILTERS PRESSURE and GRAVITY

WATER SOFTENERS INTERMITTENT and CONTINUOUS

There is only one Filter, the

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the only filter which exceeds its guarantee.

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Efficient Power Pumps.

are operated at a saving of from 50 to 60% over the actual cost of operating steam pump,—is this not worth while looking into. Write us for catalog.

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tight lacing, high speeds, and a heavy incessant pull will hasten the demise of any belt however good.

A LEVIATHAN

need not be tightly laced to extract from any machine its extreme quota of power. Extra long life, plus extra good service all through that life means a smart cut in runing expences, eh?

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Six-Arm construction used on Pulleys from 12" to 28" inclusive, 3" to 12" width of face inclusive.

The "Latshaw" All Steel Split Pulley

Built to do the work of a double belt cast iron pulley and without the use of key seat or set screws. The easiest pulley to put on and change from one shaft to another. True running at all speeds. They are simple in design. Similar to cast iron in appearance, the arms do not fan the air and being solid round bars are especially adapted for use in mills where open arms or those that collect lint and dirt are objectionable. Specially adapted for textile mills.

"Last but not least, prices are satisfactory." *Ask your dealer.*

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Boston Stock: Brown, Wales & Co. Chicago Stock: R. R. Street & Co.
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Successor to THOMAS RAMSDEN,

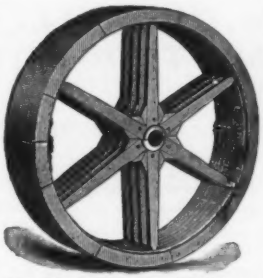
Maker of

Worsted Machinery

For Preparing, Finishing Gills and Drawing Boxes

New Screws made and old ones repaired and thoroughly case-hardened.

Repairs and new parts for curled hair machinery. Fallers of every description made. Change Gears, 5-8 7-16, 3-8 and 14 inch pitch kept on hand. All kinds of new Fluted Rollers, for Combs, Gills, Drawing and Spinning; also Refluting old ones. Improved Roller Covering Machine.



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Sales Agencies in all the Principal Cities.

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Special Machinery Built. General Machinery Repairs.

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For PLAIN and FANCY WEAVING.

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SPONTANEOUS COMBUSTION ELIMINATED

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BRETON OIL FOR WOOL TRADE-MARK

Breton Oils for Wool.

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FIG. 20.
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With Renewable Hardwood Shoes.

The Lane Patent Steel Frame Canvas

MILL BASKET

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Today there are scores of Mills, large and small, either wholly equipped with **Lane Baskets** or adopting them as fast as others are worn out.

There's a reason.

Full Illustrated Catalog No. 33 with discounts, on application.

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Sold by Principal Mill Supply Houses. **Poughkeepsie, N. Y.**

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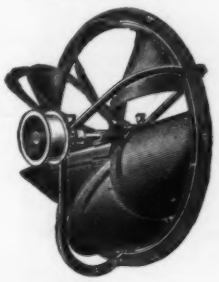
Eliminates fog—cold weather loses its grip on your Dye House when you put in a Berry Wheel.

Very efficient and economical for drying.

This is our Berry Wheel, the most effective agent for moving air, eliminating steam and other impurities in the atmosphere.



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STEAM JACKET KETTLES

Guaranteed to stand 150 lbs. cold-water test.

Equal, if not Superior, to any in the market

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It Attracts Universal Attention Because It is THE BEST

BADGER'S
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Has taken the lead in the United States, and is everywhere recognized for its efficiency. After competitive tests, lasting more than one week, THE UNITED STATES GOVERNMENT placed an order for 1,200 of

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Automatic, Chemical, Hand Fire Extinguisher Made

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Finishing, Dyeing, Sewing, Machines

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Bleaching and Napping Machinery

Established 1870

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for WOOLENS, WORSTEDS, FELTS, etc.

Built Upright or Horizontal with Low Down Feed

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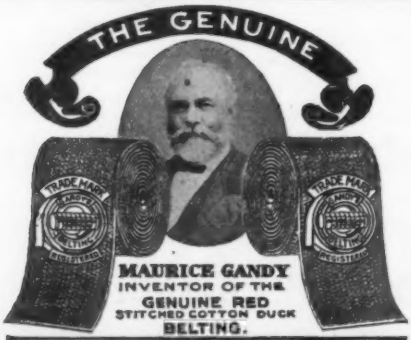

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Send for booklet "Experience with Gandy" its worth reading.

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Will not break at the corners

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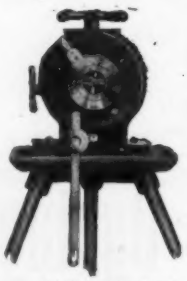

No. 201 Hand Machine.

Do your work with this MACHINE because it

Will be right.

Will be easy to do.

Will be done for good.

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Sole builders of the Green Fuel Economizer in the United States. Also Fans for Mechanical Draft, Conveying Materials, Drying and Moistening, etc. Blowers and Exhausters, Steam Heating Coils and the Green Air Heater. Heating and Ventilating apparatus. Send for Book "T W" on Fuel Economy and Fan Catalog.

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You Save Enough Insurance to Pay for the Equipment.

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

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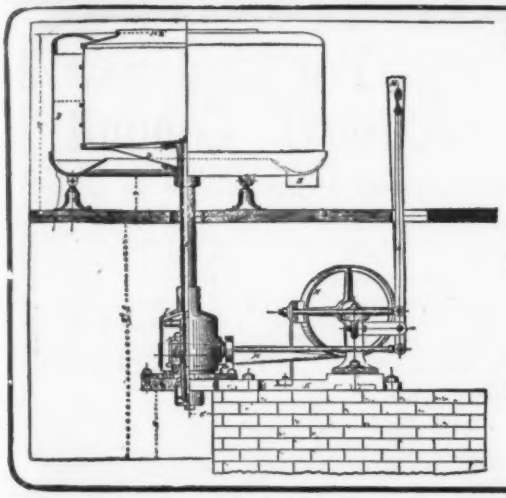

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Special Machines for Acid Work.

SHAFTING, PULLEYS,
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Incorporated 1864. Founded 1845.

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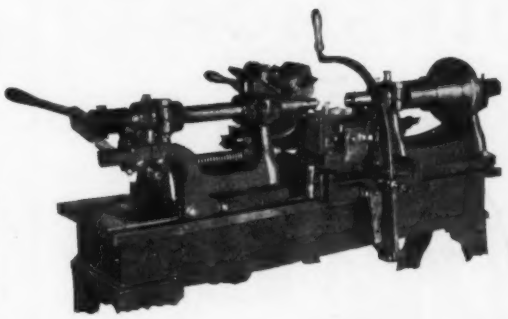
Spool and Bobbin Machinery

that enables textile manufacturers to produce their own spools and bobbins with saving and satisfaction. Tell me what capacity you require and I will tell you of the machine that will meet your requirements and what it will cost.



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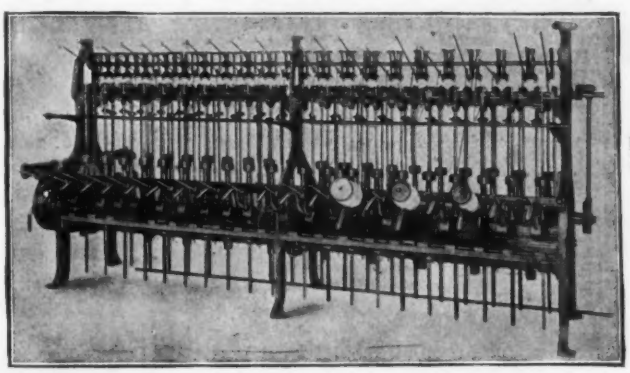
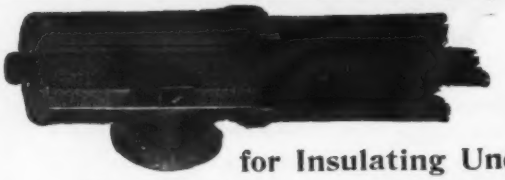
The Philadelphia Winder

Used by most all manufacturers of heavy goods in the United States and Europe.



Oswald Lever Company, Lehigh Ave. & Mascher Sts. **Philadelphia**



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for Insulating Underground Pipes

The only practical and economical method of insulating pipes, conveying steam, hot water, etc. underground. Unequaled for long distance transmission—will carry exhaust steam a mile.

In one plant, by the substitution of Portland Sectional Conduit, four large boilers were dispensed with and more buildings heated than with the old insulation. Initial cost—small. Maintenance cost—nothing.

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Manufacturers of Asbestos and Magnesia Products, Asbestos Roofings, Packings, Electrical Supplies, Etc.

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247

DINSMORE

Mill Sewing Machines

No. 9—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

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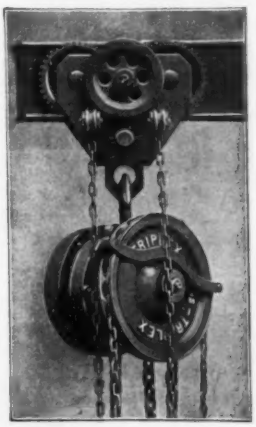

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This shows a Yale & Town TRIPLEX CHAIN BLOCK on a geared trolley running on an overhead I-beam track.

Trolley systems are up and out of the way They are very flexible and afford specific economy in lifting and conveying packages and materials of all kinds.

Tell us about your needs and we will tell you what our installations will do.

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Reinforced Concrete TANKS

We are prepared to design and construct at short notice Concrete Tanks of any desired capacity. Correspondence solicited from New England Mills.

Acid proof and Waterproof floors for Dye Houses. Concrete Construction of Mill Buildings and Chimneys.

Simpson Bros., Corporation, ENGINEERS and CONTRACTORS
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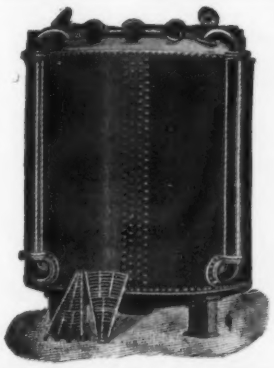

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Special Attention
Given to Repairs

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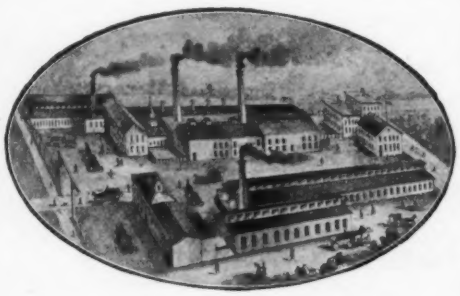


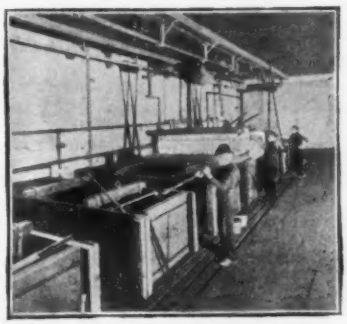
Dyer and Bleacher of Cotton Warps and Mercerized Yarns, Woolen and Worsted Skein Yarns, Eiderdown Cloth, Fine Worsteds for Dress and Knit Goods, Cotton and Woolen Hosiery.

Sample Cards Sent on Application.

53-55 Wister St., Germantown, Pa.

Waters' Dyeing Machine

This cut shows a new and useful machine patented by D. F. Waters for the dyeing of any color on Worsted, Woolen, Cotton and Merino Yarns.



Being successfully operated by some of the largest manufacturers in the country.
The saving of labor will more than pay for a machine in a few months.
Capacity; 2,000 lbs. a day per man.
Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

D. F. WATERS,
53 and 55 Wister St., GERMANTOWN, PHILADELPHIA, PA.

Two good textile devices

The Schaellibaum Grid.
The Grid with a Comb.

Combs the cotton in the lapper, extracts more dirt with less waste and produces an evener lap than any other.

Where utmost cleaning is desired, we waste less than ⅛ of 1% in lapping room—otherwise none at all. Takes work off the cards. Gives greater production. Thirty days free trial.

Patent Collar Board or Bolster for Woolen and Cotton Mule Spindles

Simple but a revolution.
Only requires re-lubricating once a year.

The spindles run in a lubricant all the time, doing away with the old time continuous oiling.

Has a life of from 5 to 10 times longer than any other and the spindle always runs steadily. Thirty days free trial.

Write us for full information.

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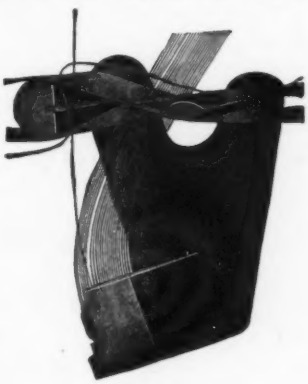
Absolute Efficiency from Bed-Rock Simplicity

Our **WARP-STOP** controls
TWO threads by ONE spring WIRE, held in a COMB,
engaging the warp
in such a way that
the TENSION is UNDER CONTROL,
and
ABRASION of the yarn is AVOIDED.

The COMBS are RAPIDLY INSERTED, BEFORE or AFTER the warp is in the loom, and are carried in a bar suspended from **the LEASE-RODS** which **ARE NOT FIXED** to the loom side, but **FREE to take their proper positions,** and **ALLOW the NATURAL MOVEMENT of the WARP,** so that **the COVER of the cloth is UNAFFECTED.**

When a thread breaks the WIRE SPRINGS OUT from the comb, thus giving
a CLEAR SIGNAL of the place of the BROKEN END,
and, by striking
a CONTACT SLIP upon which LINT CANNOT COLLECT,
closes the circuit through
a PERFECT KNOCK-OFF, EASILY and RAPIDLY FIXED, and **actuated by a SPARKLESS current.**



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The Ideal Motor Drive

A New Process Noiseless Pinion
and an Accurately Cut Metal Gear

We make them both. Write for Catalogue.

THE NEW PROCESS RAW HIDE CO.
SYRACUSE, N. Y.

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POWER TRANSMISSION SUPPLIES.

OFFICES AND FACTORY
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REGISTERED
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"Power is Money"
Power Saved is Money Earned.

Cable Address "PULLEYCOVER."
A B C Code

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Mr. Textile Mill Manager,

Everywhere.

Dear Sir:

We ask your careful attention for five minutes - no more.

We make a supply that we have sold to textile mills for over eight years. We are receiving re-orders from these mills because the use of this supply has helped them to save money, through economizing power and increasing output. Any article that will do this is worthy of your consideration.

This article is Warren's Liquid Pulley Cover. By overcoming the slipping of belts on pulleys, it increases the efficiency of machines from 10 to 50 %, with no added expense for operation. It is doing this for others; why should it not for you?

Just estimate what a gain of only 10 % on each of your machines would mean, compared to the small expense.

Warren's Liquid Pulley Cover is put up in packages of 40 sq.ft., at $5.00; 125 sq.ft., at $12.00, and 250 sq.ft., at $22.00.

Within the five minutes requested, please write for a small shipment,- now. You will find it a profitable investment.

Awaiting your valued order, we are,

Yours for mutual profit,

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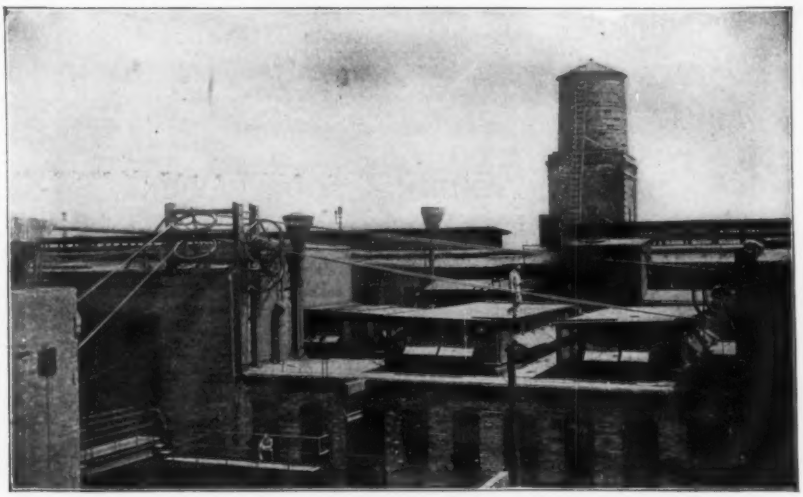

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PART I. Contains a complete directory of all the textile establishments in the United States and Canada. It tells what goods are made, the number of sets of cards, spindles, looms, whether and what they dye or finish, steam or water power, who the selling agents are, the names of the officers, superintendent and buyer.

There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains Classified List of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers' names. A list of city offices of textile mills is given.

PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a speciality of textile interests.

PART VI. Buyers Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

The Directory of the Knitting Trade in the United States and Canada

is published early each year by LORD & NAGLE CO. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendant and buyer, class of goods made, the machinery, including number of knittng machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.

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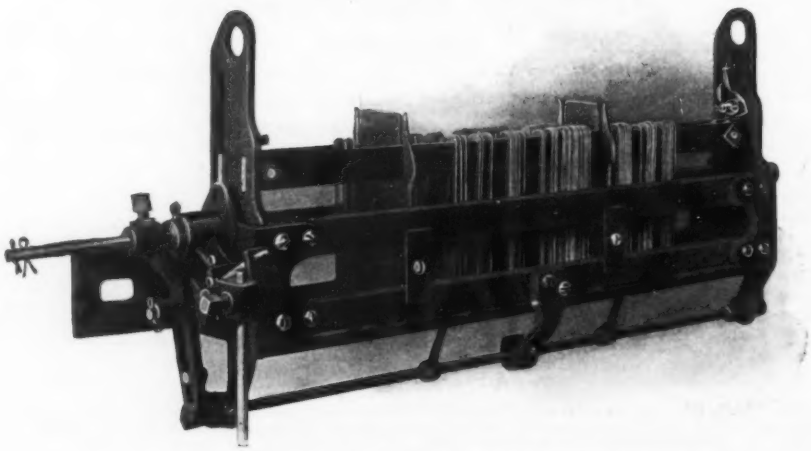

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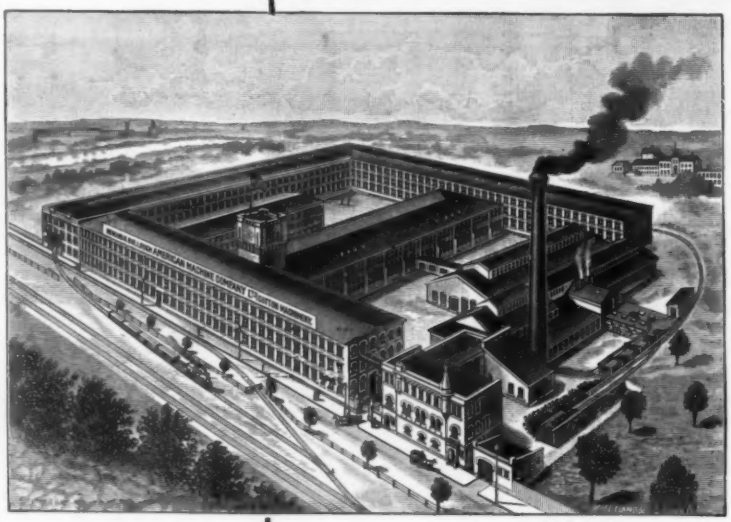

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VOL. 32 (NEW SERIES.) JANUARY, 1907 No. 4

Monthly Comment.

Tariff Contrasts.

Editor Textile World Record:

Rochester, N. Y., Jan. 2, 1907.

Trade adjusts itself to prevailing stable conditions; but disorder, want of confidence, destroys credit, the foundation of modern trade. Under free trade, as under tariffs, moderate or highly protective, even prohibitory, the supplying of the necessaries of life will go on, providing monetary affairs remain sound. The panic of 1873, originating while protection was in force, ended only with resumption of sound financial conditions in 1879; the "rich man's panic" of 1903 occurred under the same tariff under which this country is now enjoying the greatest prosperity in its history. Which, then, contributes most to a country's well-being—Tariff or Sound Finance? Q. E. D.

Max Lowenthal.

Protectionists do not deny that panics may occur under protection. Their contention is that protection to American industries is a good thing for the United States and that disaster will follow, as it did follow, any radical reversal of that policy. Mr. Lowenthal admits that the panic of 1873 and its cure were financial. He should not forget that a period of great business depression followed immediately the enactment of the Wilson bill and lasted for several years, while unexampled prosperity followed the enactment of the Dingley bill after a period of readjustment and recovery from the effects of the previous low tariff. Instead of trying to answer Mr. Lowenthal's question, let us conclude to have both a protective tariff and sound finance.

The Wool Supply.

A curious and regrettable feature in the textile industry is the neglect of the wool supply, a neglect all the more apparent because of the great if not excessive amount of attention given to the supply of other materials, notably cotton. There is a scarcity of textile materials of all kinds. The demand for silk, hemp, jute, cotton and wool has advanced the prices of all of these products, and with none of them is the scarcity more serious than in the case of wool. The attitude of the general public and of the textile trade itself toward the wool supply is, however, one of complete indifference. The trade is, apparently, no more concerned about the scarcity of wool than about the high price of camphor. If there is a shortage of cotton a general alarm is sounded throughout the world; national and international cotton federations are formed to ward off the peril; private and public commissions are sent to investigate old sources of supply; the hat is passed around among rich and poor alike to raise money for finding new sources of cotton supply, which, when found, are straightway subsidized by the government; there is a strenuous effort to bring the planter and manufacturer together that the cotton supply may not be jeopardized by lack of friendly co-operation between them; and there is a widespread and

strenuous demand for statistics of cotton production and consumption, that the world may note even the slightest change in the balance between the supply and consumption of this textile material.

We are finding no fault with all this. What we want to do is to contrast this extreme solicitude regarding cotton with the indifference regarding wool. No one thinks of forming an international wool federation to provide for the scarcity of wool; a private or a public commission organized to visit the sheep ranches of Australia, the River Plate country and North America would be ridiculed out of existence; there is not a woolen or worsted manufacturer or operative on earth who would give a cent to increase the number of sheep throughout the world; no one is interested in getting the wool grower and wool manufacturer together and making them better acquainted with each other; and as for wool statistics, like snakes in Ireland, there are none and few people seem to want any.

The neglect of the wool supply and the attention given to the cotton supply are explained by the fact that wool can be used an indefinite number of times in the manufacture of clothing, while cotton can be used but once. The remanufacturing of wool into clothing results, however, in a decrease in its value for that purpose. For this reason the importance of increasing the wool supply, to which no attention is given, is but little less than that of increasing the cotton supply, on which so much effort is expended. This development of our wool supply is a work which the government should take up at once. The officials at Washington can find many precedents for it in the extraordinary expenditure of official time and money in studying the cotton plant, operating model cotton plantations, and compiling the great variety of cotton statistics with which we are regularly and irregularly favored at frequent intervals. The Department of Agriculture realizes the need of work in behalf of the wool industry and is ready to take it up as soon as Congress shall make an appropriation. It would seem that a Congress that expends money so freely for exploiting foreign markets as the present one has done, might be induced to respond to this excellent suggestion from the Department of Agriculture.

Vacations in Textile Mills.

The announcement by the Bourne Mills, Fall River, of a vacation of ten days to the employes next August calls attention to the change that has taken place in the textile industry during the last few years. Formerly mill operatives were oppressed with the fear of an enforced vacation, due to a depression in business. Now the continuous application to mill work necessitates giving the operatives a vacation regardless of what the demand for goods may be. It is a wholesome innovation and one that will doubtless be adopted in other mills and other industries. The Bourne Mills plan was announced by the treasurer of the company as follows:

Fall River, Mass., Dec. 24, 1906.

To the Employees of the Bourne Mills:

You will receive herewith the thirty-fourth semi-annual dividend upon wages. Profit sharing will be contiued another six months. I feel myself happy to congratulate you upon the recent advance in wages, which placed Fall River again upon record as paying the highest wage known to the cotton industry in all the world. I sincerely hope there may never be another reduction of wages here. There ought not to be. The business should be adjusted to this schedule.

I trust this may be the merriest Christmas ever known here. May all try together, manufacturers and operatives, to make Fall River the most attractive spot on earth for textile wage-earners. Having this thought in mind, the board of directors of the Bourne Mills has unanimously authorized me to announce to you the experiment of a vacation week in August, 1907. While I have not made it a habit to take vacations myself (except a short trip to Europe in 1900), I can see that in these strenuous days it is becoming more and more a wholesome practice.

The mills will close Saturday noon, August 24, and re-open Tuesday morning, September 3, thus allowing you ten days of rest and recreation.

In lieu of regular pay, the directors have also unanimously authorized me to offer you an extra dividend upon your wages, payable just before the vacation, to the amount of 50 per cent. of the average weekly wages earned by each one of you, computed from the record of your wages during the present profit-sharing term closing next June.

Like all our dividends upon wages, the August vacation dividend will be paid to you upon the single condition of continuous faithful efficient service. It will be in addition to the regular Fourth of July dividend. Sincerely yours,

Geo. A. Chase, Treas.

The Textile World Record in New Quarters.

At the time this issue reaches its readers, the editorial and business offices of the Textile World Record and the Lord & Nagle Company in Boston, will be located in new quarters at 144 to 150 Congress St., where they will occupy the entire fourth floor. This change is necessitated by the demolition of the building where the offices are now located, to make way for a new bank building, and at the same time it gives the opportunity to obtain larger quarters, which the growing needs of the business demand.

The building to which they are moving is conveniently located on Congress St., between Milk and Franklin, near the postoffice, within a few minutes' walk of the South Station, and nearer the North Station than before. It has been entirely remodeled and equipped with a new passenger elevator and modern conveniences. The floor they will occupy contains upwards of 4,000 square feet, nearly double their former available space, and has been especially arranged for their requirements.

On another page of this issue will be found a map of the business section of Boston, on which the location of the new quarters is plainly indicated.

Subscribers, advertisers, and all our friends are cordially invited to call at the new offices when in Boston and avail themselves of the facilities arranged for their convenience.

A Skirmish, Not a War.

"Export," the organ of the German Central Geographical Union, refers to the tariff difficulties between Germany and Canada as follows:

Step by step the differential tariffs on the side of Germany and the preferential on the part of Canada led to a tariff war that is still being waged. What it meant to Germany appears in the record of its trade in recent years. The total exports of Germany to Canada in 1902 amounted to 38,700,000 marks; in 1903 to 35,800,000; in 1904 to 23,200,000; in 1905 to 21,800,000. This falling off is seen in its full significance when it is pointed out that the normal conditions, had there been no tariff war, would have been just the opposite—a steady gain. During the years indicated Canada's exports to Germany averaged annually about nine or ten million marks. This small amount seems much more insignificant when the fact is recalled that the German Empire is a large importer of the very commodities that Canada exports—food products of all kinds, particularly cereals and meats. It is hardly necessary to detail the efforts of each if not to injure the other, at least to make it "let up" in its rates. The German Empire went further and further in its differentiation till it affected a great many articles of Canadian production. This has had its effect. Canada, increasing its production of the articles needed most in international markets, is looking for more than a modus vivendi. . . .

What Germany wants is intermediate rates granted or regulated in such a way as to permit of German goods competing with British. To secure this competition, Germany favors a change from ad valorem to specific duties and desires changes made in administrative methods that will expedite custom-house clearances. Besides the benefits to Canada and Germany, better results would soon be recorded between Germany and other British colonies, for success in one is sure to be followed by emulation and success in the others.

Germany is evidently getting tired of her little tariff trouble with Canada.

Empire Cotton.

The progress made in raising cotton in the colonies of Great Britain was the subject of a report made at a recent meeting of the British Cotton Growing Association. The most favorable conditions are reported from Nigeria where additional ginneries are being installed for handling the next crop. A system of subsidies has been adopted in Sierra Leone, by which money is advanced to the native chiefs with the understanding that repayment is to be made in cotton during the season. In November 250 bales of cotton were ginned in Lagos, as compared with 119 bales last year, the total for this year being 5,699 bales, against 2,644 bales last year.

Arrangements have been made for a party representing the British Association to visit the West Indies and investigate the progress in that section of the empire. The party was to sail the last of December and return the last of January.

Subscriptions to the funds of the Association have not been coming in as rapidly as desired and accordingly a new appeal has been issued to employers and labor associations. About $1,250,000 has so far been subscribed, but additional funds are needed for new ginneries in West Africa.

Claims in the Woolen Trade.

The present controversy between the National Association of Clothiers and the American Woolen Co. regarding the adjustment of claims for imperfections is reported to hinge mainly on the rule, "No claims after cutting."

For many years the clothing trade has held the woolen and worsted manufacturers under its heel. The most outrageous abuses have been permitted because the manufacturers had no redress. Goods have been ordered, and after having been delivered, the original orders have been cancelled upon the flimsiest of pretenses or upon none at all. We remember a case of this kind where the clothier gave as an excuse for cancellation, that the goods had not sold as well as he expected. When orders were cancelled after the goods had been made or put in process the manufacturer was generally compelled to resell them at a loss.

Then there has been the abuse of unfair claims. We recall a remark by a large New York clothier that he paid his cloth examiner fifty dollars a month and made a profit of a hundred thousand dollars a year on the claims for imperfections the examiner reported. In the dark days of the Wilson low tariff, conditions were at their worst, and some clothiers went so far as to return to manufacturers garments that were partly worn out by the consumer, with a claim for damages on the ground that the goods had not worn as well as the consumer expected.

With the return of prosperity and the increase of demand as compared with supply, the position of the woolen manufacturers has steadily grown stronger until they are at last able to turn the tables on the clothiers and lay down rules for the settlement of claims. It is fortunate that conditions have thus changed, for the history of the last twenty-five years has proved conclusively that the woolen and worsted manufacturers cannot obtain justice while the clothiers have the upper hand. It is important, however, that the manufacturers should not abuse the power they may now possess. For years they have been denouncing the injustice of the clothiers. They should now show that all they want is justice for both manufacturers and clothiers. They could make no greater mistake than to follow the example set by the clothiers and abuse their present power. And in this connection the question arises, is not the rule, "No claims after cutting," going too far? It sounds fair, and in nearly all cases probably is fair. There are, however, exceptions. Take for example a fabric that apparently is all right, but that crocks badly when made into a garment and subjected to the friction and perspiration incident to wear. It might easily happen that the ordinary tests of the examining room would fail to disclose this defect. In that event the clothier would have grounds for a claim.

This is but an illustration of that class of cases in which the arbitrary rule referred to might work injustice. The methods of manufacturers and clothiers should be founded on justice, and the present is a particularly opportune time to reach that basis of agreement.

Reform of British Patent Laws.

Great Britain is popularly supposed to be a free trade country, but it has just been discovered or at least become generally known that through her patent laws the United Kingdom is in reality highly protectionist. Moreover the protection is given to foreign manufacturers instead of to the home industry.

In connection with the celebration of the discovery of mauve we called attention last month to the difference in the patent laws of Germany and Great Britain, which has caused the coal-tar color industry to disappear in England, the land of its birth, and flourish in a foreign country. Germany grants patents to inventors only on condition that the invention is worked within three years. England, on the other hand, grants patents without such restriction. The effect of this one-sided arrangement is to build up manufacturing in Germany and discourage it in Great Britain.

This result is by no means confined to the coal-tar industry, but extends to all transferable industries depending on patented inven-

tions. Neither is the preference confined to Germany. All the principal European countries require, as does Germany, that inventions patented by them shall be worked in the respective countries. A striking illustration of the effect of this discrimination against British patents is reported in a recent issue of the "Textile Mercury." An Englishman, traveling in Austria-Hungary, visited a textile mill in Budapest. Noticing a large number of machines that he knew were not built in England and were not generally used there because of the high cost of importing them, he asked the mill owner about them and was astonished to learn that they were built in Austria and cost much less than similar machines cost in England. The machine was patented in England, but not built there. The Austrian law, however, provides that every invention patented there must be worked or commercially produced in Austria within three years from the beginning of the patent term and that the working must not be discontinued for more than two years. Hence it is that the textile manufacturer in Budapest could buy the machine referred to for less than his competitor could in so-called free-trade Lancashire.

The British press and government are awakening to the injustice of this one-sided arrangement of international patents, and are also awake to the fact that the remedy for it lies in their own hands. Several deputations of British manufacturers and merchants have already waited on the President of the Board of Trade, D. Lloyd George, and, it is reported, have received assurance that a bill for the reform of the patent law will be introduced into Parliament at an early date.

All this is of special interest to the United States because our patent laws give unconditional protection to the patentee regardless of whether the invention is worked or not.

Viscose Work.

We have received from England samples of cotton goods treated with viscose by a secret process. It is believed that this process marks an important development in textile manufacturing. In another part of this issue is an article giving information regarding it. The samples referred to may be seen at our Boston office.

The Second Visit of the English Cotton Commission.

The second party sent to the United States by the Lancashire Private Cotton Investigation Commission reached home last month, and one of them, W. J. Orr, in an interview with a "Guardian" reporter gave a preliminary report of the trip. He first stated the object of the trip:

The wasteful and slovenly methods of baling and handling American cotton deserve all that Mr. Orr says against them. It is encouraging to find him placing the blame where it belongs, on the compress companies and the railroads, instead of on the planters, as was the fashion not long ago:

With regard to the marketing and handling of the cotton, Mr. Orr speaks very strongly. The practice in each case is deplorable. He has brought back with him some photographs, taken by himself, which illustrate more forcibly than words do the crude and wasteful methods of cotton handling. Mr. Orr says that the methods now in vogue have not changed for fifty years. Apparently the cotton growers have not yet been brought into touch with modern business life. They are in a great measure in the bondage of Protection, and the formation of trust after trust tends to keep them there. The cotton is put into bales at the plantation, but it is pressed then only in a primitive fashion. The real pressing is reserved for a later period and at another place. Consequently the railway companies cannot handle the cotton as readily as they ought to do. Twenty-five of the planter's bales fill a railway car, whereas if they were properly pressed at the outset you could put from 80 to 100 bales of similar weight in a car. There is thus a shortage of cars, and when the cotton reaches the compress towns it is bundled out of the cars on to the ground and left there in the open. In some cases thousands of bales are left in the streets for months in the mud and rain.

The former visit, he explained, took place at the growing season. The commissioners then saw how the cotton plant is treated in its early stages of growth. This time they arrived in the cotton belt at the picking time; they, therefore, saw a good deal of the American methods of handling and marketing the cotton, and the result of their observations will in due time be embodied in a report to the Commission which sent them out, and of which Mr. C. W. Macara is chairman. The object, of course, of both visits was the same —"to make inquiry on the spot, so as to ascertain as nearly as possible the cost of growing cotton, and the economical conditions under which it is

produced in the cotton belt of the United States of America; and to investigate the methods of ginning, baling, handling, marketing, and transport of the product."

"When we were in Memphis," Mr. Orr said, "the streets for miles along the line were blocked with cotton that had been tipped off railway trucks. It was raining heavily, and there was no cover for the cotton bales. This kind of handling obviously leads to an enormous amount of waste. If the cotton could be compressed straight away in the same form as the Egyptian bales the cotton could be handled by the railway companies with about one-third of the cars that are now required."

The railway companies recognize the defects of the present system and gave the Commissioners all the help in their power. "They sent along with us very well-informed men who were able to put us in the right direction at every turn."

Much of the backwardness comes, in Mr. Orr's opinion, from the vested interests of bankers, merchants, and, in some cases, the railway companies themselves in the "compress," which is a very expensive machine and out of which they make considerable profit. The Commissioners met most of the railway companies and explained these matters very fully to them, and they hope the railway magnates will give a special rate for cotton compressed at the plantation. That seems to be the only way of inducing the planters to put down machinery which will produce a bale in the required form. At the present time the planter would have to pay the same rates for carriage whether the cotton were properly pressed or not. "If this is done we are hopeful it will be the beginning of better methods.

"A very great saving would unquestionably be made if suitable machinery were introduced. The expense and loss from the bale leaving the gin and arriving at the port of shipment are enormous. These heavy charges tend, of course, to swell the price of the staple to the spinners. The method of transit in an imperfectly pressed condition is responsible for most of the damage and the high rate of insurance. In many cases, as I have said, the bales are left in the compress towns for months. They are then put on open cars exposed to sparks from the engine, and it not infrequently happens that water is sprinkled over the cotton to minimize the risk of it taking fire."

The English visitors were greatly impressed with the large number and the power of American trusts. It is somewhat difficult to explain their emotions in this respect in view of the number of industrial combines in England. Possibly the distinctive American characteristics of our trusts led the English observers to hate what in the English form they have learned to embrace:

It (improving the methods of handling cotton) will, however, I fear, be hampered by the Trusts. These things seem to enter into everything in America. We found them on every hand.

Mr. Orr touched rather gingerly on the intentions of English spinners to engage in cotton raising in America, as was to be expected, owing to the necessity for secrecy in this as in all other private enterprises of this kind. He had no doubts, however, that if the English spinners did start in the business they would be thoroughly "up-to-date" and would furnish an object lesson to mankind:

In answer to questions as to what the Commissioners thought of the feasibility of Lancashire setting up a cotton-growing business in Southern America, Mr. Orr said that was rather a delicate matter, and for the present he must only speak in general terms. "There is," he said, "plenty of land suitable for cultivation, and I am persuaded that cotton can be grown there and sent to this or other countries at remunerative prices. The Agricultural Department at Washington showed us great kindness in giving us the fullest possible information concerning land and its capabilities in various localities. If Lancashire spinners did begin cotton-growing in America they would introduce up-to-date methods. I have no doubt that capital so expended would yield a good return. But the chief advantage, in my opinion, would be found in the object-lesson which would be afforded."

Although, strictly speaking, not within the scope of the enquiry made by the Lancashire Private Cotton Commission, Mr. Orr drew for the reporter a comparison between conditions in the cotton belt at the present time and in the days of "Uncle Tom's Cabin," which is headed, "Old World Notions:"

It was out of the scope of the Commission's inquiry, but Mr. Orr was good enough to give his impressions of the extent to which the Southern planters retain the habits and notions prevalent in their grandfathers' time. As a rule, he says, the negro is very well treated by the planter, and the negro workers on the cotton plantation seem to be a fairly decent lot of people. The conditions which called forth "Uncle Tom's Cabin" are gone, but the planters, in the main, have yet much to learn of the dignity of labor. Their view is that a white man in the South who cannot do without laboring with his own hands is not fit for the country, and the sooner he finds another sphere for his activity the better.

Years ago the anxiety of Americans to know what foreigners thought of them led an Englishman to remark that the Americans met the foreigner on the incoming steamer at the New York quarantine station and asked him what he thought of the country. The interview with Mr. Orr would indicate that the desire for opinions of America has been transferred to the for-

eigner and has lost none of its strength, judging from the concluding sentence in the "Guardian" article:

Mr. Orr has been absent from England about six weeks.

The New Canadian Tariff.

Tariff bills are not framed and put into effect in Canada, as in the United States. Here the question of change is debated before the public for years, and finally made an "issue" at a general election. Then the House refers the matter to a committee, which gives public hearings. After wrangling for months the committee's bill is reported to the House, where it is amended and then passed. This process is repeated in the Senate, after which the bill bearing little resemblance to the original measure is finally referred to a conference committee, where it is again subjected to important and varied amendments. Finally it passes both House and Senate and is signed by the President, and goes into effect generally some months afterwards.

In Canada the bill is framed by the ministry and the announcement of the schedules is accompanied by a telegraphic order to collectors of customs to accept entries subject to the new rates, which thus go into effect without formal notice, although subject to amendment by Parliament. One advantage of the Canadian method over ours is that no opportunity is afforded importers to bring in large quantities of goods before the duties are increased, or to delay imports until they are lowered.

The new Canadian tariff provides for four rates of duties, the regular, the intermediate, the British preferential rate, and the surtax on German goods. Thus on women's wool and worsted dress goods the regular rate is 25 per cent.; the intermediate, 22 1/2 per cent.; the preferential rate on British goods, 17 1/2 per cent., while the tariff on German dress goods is 32 1/2 per cent., or 30 per cent. above the regular rate. From an examination of the new schedules it is evident that the present Canadian government has either no comprehension of or no sympathy with real protection. Take, for example, the duties on dress goods given above. They are all ad valorem, and thus subject to shrinkage by undervaluations. Even the tariff, 32 1/2 per cent., on German goods would in this country be considered nothing more than for revenue only. The bulk of the imports will as a matter of course come from Great Britain, subject to the preferential rate of 17 1/2 per cent.

The wide gulf that separates the new Canadian tariff from the protection that American labor needs against the low-priced labor of Europe becomes evident when we consider that the duty collected on wool and worsted dress goods imported into the United States for the year ending June, 1905, averaged 102 per cent., and that the actual protection under the Dingley law is not fully represented by that rate, because the specific duties are practically prohibitory on low grade goods. The Canadian government has apparently left the Canadian textile industry to die. That this is the opinion of Canadian manufacturers is indicated by the following extracts from letters to "The Canadian Journal of Fabrics:"

The Paris Wincey Mills Co.: Our opinion is that additional protection has been given where least required, and where relief was actually required it has again been withheld. Speaking of our own line, grey flannels, at the last revision of the tariff some three years ago, the tweed and cloth manufacturers were given a protection of net 30 per cent., while the flannel manufacturers were altogether ignored and left with a protection of 23 2/3 per cent. Why we were treated in this way we have never been allowed to know. When asked the reason why it was done (a short time ago) the Minister of Finance replied that he was told that we did not need it, but refused to give us his authority for the same. However, the fact remains, and now there is, and has been for a year or two back, a low quality of flannel imported from England and sold at a less price than we can produce it. It is made from a very poor quality of shoddy and waste, the makers having the advantage of the low-priced shoddy and cheap labor. We think the least that should be guaranteed us, would be to place us on the same footing as the other manufacturers of woolen goods, such as tweeds and cloths. As you will see for yourselves, we are again ignored as before. It is simply an outrage to Canadian manufacturers.

John M. Lalor, Toronto Knitting Factory: I can speak only of the woolen and knitting industries, and in connection with these I am very much disappointed that nothing has been done to protect the interests of the woolen men, the effect of which undoubtedly will be to do away with this branch of the textile business in Canada. That the protection of knitted goods should also be reduced is, I suppose, but natural to expect, when

the treatment afforded the woolen men is noted.

John Dick, Limited, manufacturers of jute and cotton bags, Cobourg tweeds and worsteds, Toronto: The woolen mills have again received less than justice, and unless there is some modification made in some items, more of us will have to go out of business with a loss not only of our capital, but also of employment to the working people and of trade to the storekeepers in the towns where the mills are situated. It seems to be impossible to get Cabinet Ministers to realize the difference between partial and complete manufacturing. If they find a partial manufacture prospering with 20 per cent. protection they reason that a complete manufacture with 30 per cent. ought to be very well off: leaving out of account that the complete manufacture may do three times the work that the partial does and should have 60 per cent. to be in proportion. Thirty-five per cent. has been found after most exhausting search to be the lowest tariff to put the woolen mills on a creditable footing.

Richelieu Woolen Mills, Chambly, Que.: The effect will be just what it has been ever since the present Government have been in power, i. e., continue to close the Canadian mills and hand over the textile trade to Great Britain.

B. F. Brook, Listowel Woolen Mills: The way I look upon the new tariff is: They have not even brushed off the dust from the old, but added on a small fraction of new, and it looks as if the woolen industry of Canada is done for. As a small manufacturer I don't see any other way out but to close down and wait until some relief comes. I fancy I can see the Yorkshire woolen men jubilant. I had the pleasure a year ago of hearing and seeing them thus over the old tariff.

The Slingsby Manufacturing Co., Limited, Brantford: In regard to our lines, which are chiefly blankets, we regret to find that instead of having a net duty of 23 1/3 as in the former tariff we have now to be content with 22 1/2. This is on blankets composed wholly of pure wool. Now we do not know under what items union and shoddy blankets would come. We are pleased to note that on textile machinery, such as is not made in Canada, the rate of duty all round is ten per cent. and while this reduces the value of existing plants, it is somewhat of a help for future purchases of machinery.

Robt. S. Fraser, Montreal: The framers of the tariff had one object in view, and never lost sight of the old man's advice to his son, "Get money, honestly if you can, but get money." The mills of the gods grind exceedingly sure destruction to the woolen industry of Canada. Seven and a half per cent. duty on shoddy, wastes, etc., will ruin the shoddy manufacturers, without any material advantage to the woolen manufacturer. The duty has been raised on a number of articles in supplies used by the mills.

Dominion Textile Co., Limited, Montreal: In so far as our company is concerned the change in duties upon the lines which we manufacture is so very small that we do not anticipate that it will have any effect whatever upon our trade in the immediate future.

Louis Simpson, Montreal Cotton Co.: So far as this company is concerned the tariff is not satisfactory.

The Thessalon Woolen Mill Co.: We consider the tariff schedule not in the interest of the woolen mills of this country, and unless something more is done to shut out foreign importations of woolens, that can and should be made in this country, there will soon be fewer mills running than there are today.

Another Conference of Cotton Growers and Manufacturers.

Preliminary steps have been taken for another conference of cotton growers and manufacturers to be held at some place in the South next October. The following associations have given their approval to the plan: the International Cotton Federation of Europe; the Southern Cotton Association; the Farmers' Educational and Cooperative Union; the National Ginners' Association; the National Association of Cotton Manufacturers; and the American Cotton Manufacturers' Association.

The time and place have been selected to suit the convenience of the growers and bring the visiting manufacturers among the cotton fields at a time when the cotton is being picked, ginned and baled.

There have been many conventions of cotton planters and of cotton manufacturers, but none more important than the Cotton Conference at Washington in May, 1905, at which representatives of the growers and of both American and foreign manufacturers discussed the many problems affecting the cotton industry. It was the first joint conference of cotton planters and manufacturers ever held, and it has already exerted a great influence in promoting a good understanding between these branches of the cotton industry. The most notable feature of the Washington Conference was, however, the promise for the future. It showed plainly the great advantage that would result from perfecting the organization to make such gatherings include all branches of the cotton industry in all countries. At Washington most of the foreign representatives were from Lancashire, only one, M. Le Blan, coming from the Continent of Europe. This deficiency should be supplied in future conferences. Not only should the Continent of Europe be represented, but other cotton manufacturing countries as well. Canada, Mexico and Japan could easily arrange for

representation at the conference next October, and thus give the occasion its proper international character. There is, however, no time to lose and we hope those in charge of the arrangements will not waste any valuable time by unnecessary delay.

Japan and the Cotton Trade.

Reports of Japanese activity in the cotton industry come from many quarters. Manchester has been excited by the statement that Platt's have received from Japan an order for cotton mill machinery, aggregating 3,000,000 spindles. While no authoritative announcement regarding the order has been issued yet, it seems certain that a large Japanese contract has been booked by English textile machine builders. The control of the Chinese market is the immediate object of Japanese ambition, for the attainment of which they possess exceptional facilities. Among these is a large supply of cheap labor, proximity to the market and a knowledge of the needs of the Chinese. John E. Jones, the American consul at Dalny, in a recent report gave the following particulars concerning this question:

"During the last six months the mills in Japan increased their spindles with this very object in view. Evidence is not wanting that the Japanese Government is looking with favor and lending financial assistance to the development of this industry. Japan has many things in her favor in this struggle for the cotton market of China. She has an abundance of cheap concentrated labor, understands the wants of the Chinese people, and is in a better position geographically to meet the demand than any other country.

"China is producing large quantities of cotton, but the quality is not good, and has to be mixed with either American or Indian cotton to produce a good fabric. Japan uses large quantities of Chinese cotton in the manufacture of textiles, and will no doubt seek control of the supply. She is even now, it is said, growing cotton of her own in Korea, in order to make herself independent of the foreign supply.

"It is interesting in this connection to note the sources from which Japan obtains her raw cotton. From reliable statistics for the half year ending June 30, 1906, it is shown that the cotton mills of Japan used 209,574,662 pounds of raw cotton. Of this amount, India supplied the greatest quantity, 75,673,683 pounds; China, 67,996,954 pounds, and America, 58,541,589 pounds. From all other sources only 7,362,436 pounds were used. With three exceptions all the mills in Japan used American cotton. Five mills did not use Indian cotton at all, and five did without any of the Chinese product.

"The total number of spindles in operation in the cotton mills of Japan last July aggregated 1,371,730 and the cotton consumed that month 35,814,125 pounds. These figures evidence the rapid strides the cotton industry is making in Japan. Nearly every mill increased its spindles and enlarged its capital stock, and every mill showed a satisfactory financial condition.

"There was talk of building a cotton mill in Dalny, but conditions for several years to come will not warrant the outlay. The cost of living is more than double what it is in Japan, and there is a scarcity of labor, which would make such an institution almost impossible to operate at a profit."

Preparing Wool for the Market.

They do some things better in New Zealand. Because of the frequent fires on ships carrying New Zealand wool a Royal Commission was appointed some time ago to investigate the causes and recommend remedies for the difficulty. A preliminary report has recently been issued, in which the Commission state that the regulations in regard to shipments of wool should be amended. They recommend the appointment of inspectors whose duty it will be to see that all wool exported from the islands is in proper condition, and who shall be empowered to withhold from shipment any wool they may consider unfit.

The chief defect heretofore has been an excessive amount of water in the wool, causing spontaneous combustion, as well as being a fraud on the purchaser. The Commission recommends that negligence in packing should be punished by a fine, but that when false packing is detected, the offender should

be punished by imprisonment. The cost of inspection is to be met "by a charge upon every bale of wool shipped from the Colony."

It is expected that the new regulations will be framed and put into effect before the shipment of the next clip. This official inspection of New Zealand wool is in line with the inspection and official certification of the quality of Japanese habutai, which was put into force some time ago. The principle involved in both cases might profitably be adopted in the United States for the regulation of the packing of cotton.

Lancashire's Profits.

There is no slackening in the tide of prosperity in the cotton trade of Lancashire. Returns for the year ending Nov. 30, 1906, from nearly eighty spinning mills there show an average dividend of 18 per cent. on the capital stock of $25,000,000. In addition to this large amounts have been earned and added to the reserve of several of the mills. The prospects for the coming year are exceptionally bright, the only adverse factor being the large number of new mills that are being put into operation. The demand for cloth and the pronounced scarcity of yarn are, however, factors that promise to offset the bearish influence of the increased production.

Prosperity.

The general prosperity of the textile industry is reflected in the dividend returns of New Bedford mills for 1906, which amounted to $1,876,785 or 8.92 per cent. of the capital stock. In 1905 the dividend paid by the same mills averaged 6.6 per cent.; in 1904, 5.2 per cent.

Labor, as well as capital, is sharing in this prosperity which is not only an American, but a world-wide phenomenon at the present time. While the general business condition may be somewhat more satisfactory in this country than abroad, the profits in cotton manufacturing are even larger in foreign countries than in the United States.

Wages in European Textile Mills.

The International Federation of Textile Workers has recently issued from Manchester, Eng., a report of the condition of textile operatives in England and on the Continent. Following are the weekly wages of English operatives:

Weavers	$4.86
Spinners	9.72
Cardroom workers (males)	7.29
Cardroom workers (females)	5.35
Beamers	7.29
Bleachers	8.76
Bleachers (females)	4.37
Loom fixers	10.20

For Holland the wages per week are given as follows:

Spinners	$4.86 to $7.08
Cardroom workers	3.12 to 4.37
Weavers	2.40 to 4.05

In Denmark the average rates are:

Spinners	$4.86
Weavers	$3.89 to 4.37

Very low wages are reported from Flanders, where weavers running four looms earn $2.64 to $2.88 per week.

The worst conditions are found in German mills. In Silesia men weavers make $2.28, and women $1.68 per week, while in the best district, Central Franconia, the weavers earn $4.86 on four looms. Referring to Upper Franconia the report states that "the manner of living of the textile workers corresponds to their low wages—plain, scanty, and often insufficient food. Their principal nourishment consists of coffee and bread, herrings and potatoes; meat rarely appears on their table."

There are 108 cotton mills in Brazil with 715,078 spindles and 26,054 looms; the total number of workers is 37,638.

Over 14 million pounds of raw silk were imported into the United States in the year ending June 30, 1906, and the average price was $4.05 a pound.

Our Account With Germany.

On the 30th of next June the temporary trade concession made to the United States by Germany last spring expires by limitation. If no new arrangement is made by the governments of the two countries before that time, goods imported into Germany from this country will be subjected to the highest duties provided by the new German tariff law. This act, which it required years to frame, is highly protective and provides for two classes of duties—the high rates named in the tariff law, and the conventional rates, which are to be conceded by treaty to those countries that make corresponding concessions on goods imported from Germany. The German tariff law says to foreign countries: "We will tax your goods at the highest rates unless you lower your duties on goods imported from Germany."

CONCESSION BY GERMANY.

When this act went into effect last March the German government postponed its operation for one year as far as the United States was concerned. Under this provisional arrangement goods have been admitted into Germany from the United States at the low rates conceded to other countries that have made corresponding concessions to Germany. In other words, Germany has accorded to us concessions that Austria, Italy, Russia, Switzerland, Roumania and Servia have been forced to pay for. This concession to the United States was limited to one year and, it was announced from Berlin, was intended to afford an opportunity for negotiations for a more permanent trade arrangement, under which the United States was to lower the Dingley duties on German goods in return for a continuation of the present rates on American goods imported into Germany. The German proposition to the United States is this: "We will continue to give you the advantages of the lower duties on your goods imported into Germany providing you will lower your duties on our goods. If you do not lower your duties we shall levy on your goods, the highest rates named in our tariff law."

NO BLUFF NOW.

It would be a mistake to assume that this German proposition is a bluff. The basic principle of the present German tariff law is at stake. It required years to frame that law, which is a remarkable example of German thoroughness and system. The care with which every detail was arranged to conform to the guiding principle of regular and conventional rates recalls the preparations made by Germany for the war of 1870-71 with France. When General von Moltke was awakened in the night and informed that war had been declared, he pressed one or two buttons that started into operation the plans he had been forming for years for such an eventuality, and then calmly went to sleep, rising in the morning to find that the war machine was in full operation. It was with a like system that the present German tariff was framed, and it was a heavy blow to German pride when, a few months ago, the imperial government bowed to conditions it could not control and asked the Reichstag to give to the United States all the advantages that other and commercially weaker nations were compelled to buy at a high price. The blow was softened by calling it a temporary arrangement to gain time for negotiations, and in almost every reference to the subject that we have seen in the German press emphasis has been laid on the fact that the present concession is to last but a short time, and that the United States must soon choose between lowering the Dingley duties on German imports and having the present German duties on American goods raised to the limit. The sentiment in Germany is such that when the tariff commission, headed by Census Director North, recently visited Berlin to talk things over with the German officials, the press announced their coming as "Das Ende des Dingley-Tarifes." The German people are apparently expecting that the United States will reduce materially the Dingley rates on German goods to avoid the high rates of the new German law.

June 30 1905.

The German Empire,

Europe.

IN ACCT. WITH THE **UNITED STATES OF AMERICA.**

GENERAL MANUFACTURERS.

TERMS, CASH

Dr To Exports for 12 months	
Cotton	$ 88,258,168.
Provisions	20,888,305.
Breadstuffs	17,221,817.
Copper	14,224,339.
Oil	10,546,345.
Fertilizers	2,578,071.
Naval stores	3,287,919.
Furs & skins	1,122,709.
Fish	1,703,876.
Fruits & nuts	2,836,441.
Oil cake & meal	5,784,303.
Seeds	1,213,727.
Tobacco	4,992,711.
Iron & steel mfrs	5,872,028.
Wood "	2,652,961.
Leather "	1,589,594.
Cotton "	601,541.
Drugs & chemicals	1,119,475.
Agricultural impts.	1,246,101.
Sundries	8,590,936.
Total debit	$ 191,271,367

Cr By Imports for 12 months	
Cotton manufactures	$14,332,763.
Silk "	5,213,698.
Wool "	3,250,617.
Fibre "	2,694,027.
Coal tar colors	4,387,191.
Chemicals	13,389,113.
Earthen ware	4,770,443.
Glass	1,479,895.
Toys	4,512,897.
Metal manufactures	6,653,111.
Leather "	3,962,883.
Paper & "	4,372,662.
Wood "	1,141,726.
India rubber "	895,192.
" " raw	2,582,443.
Bristles & hair	1,779,806.
Fertilizers	2,867,097.
Furs & Leather	7,442,484.
Hides	4,828,833.
Hops	1,564,847.
Diamonds & jewelry	1,347,134.
Wines, liquors & spirits	2,452,361.
Oils, volatile	1,413,953.
Books, maps &c	1,164,937.
Cement	697,242.
Sugar	4,296,217.
Sundries	14,774,789.
Total credit	$118,268,356.
Balance due U.S.A.	73,003,011.

WE MUST FACE THE ISSUE.

A middle course consists in accepting such modifications of the Dingley Administrative Act as the Washington administration may concede without an act of Congress, but it is inconceivable that the German empire should accept the trifling concession that might be made in that way to all countries as a quid pro quo for the conventional rates of the scientific German tariff. It is more reasonable to assume that the time is now approaching when the German tariff button will be pressed and the full German rates imposed on American goods unless Congress lowers the Dingley duties on German goods. Let us then consider the state of trade between the two countries and determine the probable results of such action on the part of Germany.

To facilitate this examination we will arrange the exports and imports between the two countries in the form of a regular statement of account between two merchants, taking for this purpose the trade for the year ending June, 1905. In that year we sold to Germany goods to the value of $191,271,267, and bought in return merchandise valued at $118,268,356, leaving a balance in our favor of $73,002,911. The magnitude of this trade, amounting, as it does, to $309,539,623 a year for both imports and exports, along with the fact that over 60 per cent. consists of goods sold to Germany and only 39 per cent. goods bought of that country, makes the prospect of a tariff war deserving of the most careful consideration. Moreover, that prospect is of especial interest to the textile industry because $114,621,633, or 37 per cent. of this export and import trade, consists of textile products, raw cotton alone forming nearly one-half of all our exports to Germany.

Will the full rates of the German tariff with which we are threatened after the 30th of next June injure seriously this large export trade with Germany? What means have we for defence against the increase of the German tariff? Do our imports from Germany afford the necessary facilities for retaliation, or must we submit and lower the Dingley tariff in order to save our German trade? These are questions that can be answered only by an anaylsis of our account with Germany.

COTTON THE IMPORTANT FACTOR.

Let us examine first the items of our sales to that country. First on the list is $88,258,168 for raw cotton. Turning to the new German tariff we find that cotton is on the free list. Germany has built up a large and flourishing cotton manufacturing industry requiring large quantities of raw material that cannot be raised at home. Cotton is admitted free into Germany as a means of self preservation. To tax it would be to wipe the German cotton industry out of existence and throw a large number of German operatives out of employment. Germany uses a considerable quantity of the cheap and dirty cotton from the East Indies, but the bulk of the cotton used in German mills comes from the United States and can be obtained nowhere else. For years the German government has been doing its best to become independent of the American cotton belt by developing cotton growing in German Togo. Government railroads have been built, steamships subsidized, American cotton planters employed, minimum prices guaranteed to the natives for their cotton, but in spite of all this Togo cotton has not yet become visible to the naked eye.

Failure and scandal have marked the history of Germany in Africa, and it is but a few weeks ago that the Reichstag refused to appropriate any more money to be thrown into the Togo hole, and was for that reason dissolved by the Kaiser and elections for a new Reichstag ordered. The attempt to raise cotton in the colonies of other countries has met with no better success. The British Cotton Growing Association is issuing frantic appeals for money and predicting failure of the colonial cotton enterprise unless cash is forthcoming to bolster it up. Colonial cotton is an iridescent European dream. Germany can get the cotton she needs only from the United States, and for that reason American cotton will remain on the German free list.

FEEDING THE GERMAN PEOPLE.

The next two items, provisions and breadstuffs, sold to Germany amount to $33,110,122. Turning to the German tariff we find that by a special clause the reduction of duties on these products, by treaty, is limited to very small proportions. For example,

the regular duty of 7 marks per cental on rye cannot be reduced by treaty below 5 marks; on wheat the limits are 7.50 and 5.50 marks; on barley, 7 and 4 marks; on oats, 7 and 5 marks. This limiting clause was inserted at the demand of the agrarian party to protect German agricultural products. For a like reason the duties on provisions were imposed, and as a result the population of Germany has been facing a serious scarcity of food products. Germany is but one-third larger than California, and yet has a population of 60,000,000, two-thirds that of the population of the United States. By taxing food products Germany is starving her people, crippling her industries and inviting a social revolution. Under these circumstances no serious discrimination against our exports of food products need to be feared, and, consequently, those items can be set aside with cotton on the negligible list.

COPPER FOR GERMAN INDUSTRIES.

Copper comes next, our exports of that metal to Germany amounting to $14,224,339. Copper is on the German free list and can be placed on our negligible list because it is scarce and a necessity to German industry. Next comes $10,546,345 charged for oil, which is admitted free into Germany when intended for industrial purposes, and can be placed on the negligible list. There also may be placed fertilizers, $2,518,071; naval stores, $3,287,919; and furs and skins, $1,122,709, which are admitted free into Germany and on which no duty is to be expected. Other items such as fish, $1,703,876; fruit and nuts, $2,836,441; oil cake and meal, 5,784,303; seeds, $1,213,727, can also be placed on the negligible list, because the German duties are now so small that no important advantage could be offered us by reducing them.

THREE KINDS OF GERMAN PROTECTION.

We now have $164,606,020 (of which $88,258,168 is for raw cotton) as the value of our exports to Germany on which we have nothing to expect or fear in the form of increased duties. Of the remainder there is $4,992,711 for tobacco, and $13,081,700 for iron, steel, wood, leather and cotton manufactures, drugs and chemicals, and agricultural implements. The remaining $8,590,936 is also largely for manufactured products, where the cost of skilled labor is an important item in the cost of production. On these manufactured products Germany imposes her highest duties to protect German labor, not against the high-priced labor of the United States, but against the competition of countries where wages are below the German level. Against the importation of American manufactures Germany has three kinds of protection; first, a far lower rate of wages; second, the high duties imposed by the German tariff; and third, the protection afforded by the German patent laws, to which we will refer presently. A lowering of the German tariff rates on manufactures by treaty, likely to be small in any event, would still leave German manufacturers safely intrenched behind the chief bulwarks of German protection—low wages and discriminating patent laws.

A DIPLOMATIC QUESTION.

This survey of our sales to Germany of $191,271,267 worth of goods shows that we have little if anything to fear from the new German tariff. Now let us examine the other side of the account. An attempt by Germany to shut out American goods by imposing duties higher than the conventional rates that may be conceded to other countries raises the exceedingly important and difficult question of the most favored nation clause, involving old treaties with the kingdom of Prussia, which have never been abrogated. That diplomatic phase of the question we do not understand and shall not discuss here. Instead, let us consider the possibility of the Washington government finding that such discrimination against American products is a violation of our treaty rights calling for retaliatory measures. What facilities for such retaliation do our purchases from Germany afford?

LOW PRICED LABOR IN GERMANY.

Of the total value, $118,268,356, of goods bought from Germany, $25,491,100 was for textile manufactures. Cotton goods were valued at $14,332,763; silk goods, $5,213,698; wool goods, $3,250,612; other fibre

manufactures, $2,694,027. Why is it that German manufacturers can buy American cotton in Texas, transport it to European ports, then far inland to the mountains of Saxony and Thuringia, manufacture it in a district surrounded by natural difficulties and offering no natural advantages, then send the finished product to the United States, pay the Dingley duties, and sell the goods in competition with our home-made products? The only possible explanation is found in the low wages paid for German labor, in some cases barely a living wage. The following item from our issue of July, 1906, based on statements in the German press, shows the condition of workers in German textile mills:

> From time to time the disputes between employers and employees in European mills disclose the low wages and hard conditions of employment prevailing there, and serve as warnings to Americans against any reduction of the tariff that would bring our working people in competition with cheap foreign labor. The latest instance is the demands made by the dyers in M. Gladbach and Odenkirchen, Germany, for a 10-hour work day and an increase of 20 per cent. in wages, with a minimum wage of 22 marks ($5.28) per week for skilled hands. From this it would appear that the present rate is around $4.40 per week.

Compare this with the existing conditions in American mills with high wages advancing and machinery idle waiting for help, and we have an explanation of the importation of $25,491,100 of German textiles in spite of the Dingley tariff.

WE CAN MAKE THE GOODS OURSELVES.

Now, with the possible exception of $5,331,326 for laces, practically all of this $25,491,100 worth of textile goods bought in Germany, can be advantageously made in the United States, giving employment to American labor. Applying the principle formulated by Abraham Lincoln, we now have the German goods and the Germans have our money. If we make the good ourselves we will have both the goods and the money. To make these goods, however, the tariff must be so adjusted as to protect American labor against the low-priced labor of Germany. Thus the obvious reply to any breach of treaty obligations on the part of Germany is to raise the tariff rates on German textile manufactures, and transfer the manufacture of those goods either to the United States or to other countries than Germany. We may be benefited by such a course, while Germany is a sure loser.

COAL TAR COLORS.

Two items in our purchases from Germany, closely related to the textile industry, are coal tar colors, $4,387,191, and chemicals, $13,389,113, a total of $17,776,304. The 30 per cent. Dingley duty on coal tar colors has not resulted in establishing the manufacture of those colors in the United States on a large scale. That industry is practically monopolized by Germany. Why? Because the patent laws of the United States protect the German industry against American competition. The United States grants a patent that forbids any one to manufacture the product in the United States for seventeen years. Germany grants a patent on the same article, but provides that it must be manufactured on a commercial scale in Germany within two years, otherwise the patent becomes void.

This combination of unlimited patent protection in the United States and limited patent protection in Germany has given the Germans a practical monopoly in the manufacture of coal tar colors. They patent their colors in the United States, preventing anyone else from making the colors here and then they manufacture the colors in Germany. Today they have the additional and important advantage of an established and thoroughly organized industry, possessing a vast accumulation of technical and secret data, the accumulation of years, during which they have enjoyed the protection of American laws. If any discrimination by Germany against our exports to that country should make action on our part necessary, the course to be adopted in respect to coal tar colors would not be an increase in the Dingley rates alone. With our patent laws protecting the foreign monopoly that would be simply a tax on our domestic consumer and not, as is ordinarily the case, on the foreign monopoly.

The obvious course would be to withdraw the protection our patent laws now give manufacturers and require them to manufacture in the United States all patented articles within two years in order to retain the pro-

tection of our patent. Then foreigners who obtain the protection of our patent laws would be compelled to make the goods in the United States or allow others to do so. That would apply to all articles including coal tar colors, and to all countries including Germany. It would not be retaliation against Germany. It would be adopting the wise policy followed by Germany herself. It would transfer to the United States the manufacture of many patented products that we now import. This would give us both the products and the money and effectually block the plans of the German manufacturers who have established color works in France which have never been put in operation, but are held in readiness for a tariff between Germany and the United States.

WE BUY THE PRODUCTS OF GERMAN LABOR.

Textile manufactures, coal tar colors and chemicals, form nearly three-eighths of our purchases from Germany. Examining the items of the remaining five-eighths we find nearly all to be manufactured goods, in the production of which skilled labor is an important factor. Earthen and glass ware, toys, and manufactures of metal, leather, paper, wood and rubber, added to textiles, coal tar colors and chemicals, all affording good opportunities for protection to American labor, amount to $71,056,213, or 60 per cent. of the total. The articles making up the remaining 40 per cent. either belong to the same class or can be easily obtained from other countries than Germany. Nowhere in the list do we find any purely German product required for the employment of American labor.

From this analysis of our account with Germany it is evident that there is no occasion for alarm on our part, no necessity for consenting to "Das Ende des Dingley-Tarifes." On the contrary it discloses places where that law and our patent laws may wisely be strengthened to afford increased opportunities for American industry.

HOPING FOR PEACE WHILE READY FOR WAR.

We hope there will be no tariff war with Germany. The threat of such a contest, however, comes from Germany and not from the United States. Our statement of account with Germany shows that we have much to gain and little if anything to lose, while Germany has much to lose and nothing to gain in such a contest. There is no disposition in this country to take advantage of Germany because of her commercial weakness. Nothing, however, could be more absurd than for us, while occupying our present vantage ground, to impair the protective principle of the Dingley tariff in response to this pop-gun threat from the German Empire.

Cotton Goods in the Philippines.

The United States made a particularly bad showing in the cotton goods trade with the Philippines for the three months ending last March. The following summary of the cotton goods imported in the archipelago during that quarter show this country to be in sixth place, supplying but 2 7/10 per cent. of the total:

Great Britain	56.34 per cent.
Spain	12.30 per cent.
Switzerland	5.90 per cent.
British E. I.	5.65 per cent.
Germany	4.94 per cent.
United States	2.70 per cent.
France	1.40 per cent.
Other	10.77 per cent.
	100.00 per cent.

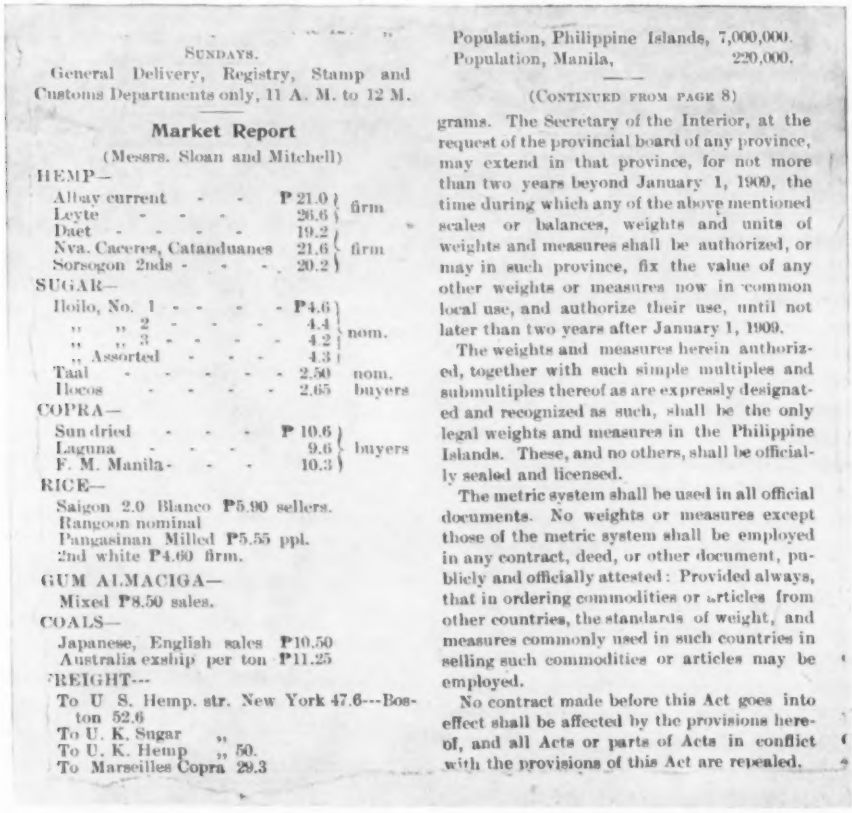
Asking for French Money.

The cotton supply for Europe is not only an industrial but a serious social and political question, evidence of which is found in the proposition made to the French Assembly and received with much favor to grant a subvention to the French Colonial Cotton Growing Association. The plan is approved by the French cabinet, but the amount asked for by the cotton association was cut down somewhat before submission to the Assembly. It is expected that the appropriation will be made.

Sicily produces about 500,000 tons of sulphur annually, or 80 per cent. of the production of the world.

"Simplified" Weights and Measures in the Philippines.

On the 3d of last August the Philippine Commission at Manila issued an order to take effect January 1, 1907, abolishing after a stated period the use of all weights and measures in the Philippines except those of the metric system. The date of this order was three weeks before that of the famous



SUNDAYS.

General Delivery, Registry, Stamp and Customs Departments only, 11 A. M. to 12 M.

Market Report

(Messrs. Sloan and Mitchell)

HEMP—

Albay current	₱21.0	firm
Leyte	26.6	
Daet	19.2	
Nva. Caceres, Catanduanes	21.6	firm
Sorsogon 2nds	20.2	

SUGAR—

Iloilo, No. 1	₱4.6	
" " 2	4.4	nom.
" " 3	4.2	
" Assorted	4.3	
Taal	2.50	nom.
Ilocos	2.65	buyers

COPRA—

Sun dried	₱10.6	
Laguna	9.6	buyers
F. M. Manila	10.3	

RICE—

Saigon 2.0 Blanco ₱5.90 sellers.
Rangoon nominal
Pangasinan Milled ₱5.55 ppl.
2nd white ₱4.60 firm.

GUM ALMACIGA—

Mixed ₱8.50 sales.

COALS—

Japanese, English sales ₱10.50
Australia exship per ton ₱11.25

FREIGHT—

To U. S. Hemp. str. New York 47.6—Boston 52.6
To U. K. Sugar "
To U. K. Hemp " 50.
To Marseilles Copra 29.3

Population, Philippine Islands, 7,000,000.
Population, Manila, 220,000.

(CONTINUED FROM PAGE 8)

grams. The Secretary of the Interior, at the request of the provincial board of any province, may extend in that province, for not more than two years beyond January 1, 1909, the time during which any of the above mentioned scales or balances, weights and units of weights and measures shall be authorized, or may in such province, fix the value of any other weights or measures now in common local use, and authorize their use, until not later than two years after January 1, 1909.

The weights and measures herein authorized, together with such simple multiples and submultiples thereof as are expressly designated and recognized as such, shall be the only legal weights and measures in the Philippine Islands. These, and no others, shall be officially sealed and licensed.

The metric system shall be used in all official documents. No weights or measures except those of the metric system shall be employed in any contract, deed, or other document, publicly and officially attested: Provided always, that in ordering commodities or articles from other countries, the standards of weight, and measures commonly used in such countries in selling such commodities or articles may be employed.

No contract made before this Act goes into effect shall be affected by the provisions hereof, and all Acts or parts of Acts in conflict with the provisions of this Act are repealed.

FROM A MANILA NEWSPAPER, SHOWING THE GENERAL USE OF SPANISH AND ENGLISH WEIGHTS, AND THE "SIMPLIFIED" ORDER ABOLISHING THEM.

but now defunct "simple spelling" order issued from Oyster Bay, which was rescinded in response to a popular protest about three weeks before its Manila prototype was to go into effect. The spelling order lasted long enough, however, to leave its imprint on the Philippine edict, which provides that "the fundamental system of weights and measures thruout the Philippine Islands shall be the system known as the metric system." This remarkable order states that:

Until the first day of January, 1909, the use of the following is authorized:

Then follows a statement of the Spanish weights and measures which have been in use in the Archipelago since the first landing of the Spaniards in 1521, about four hundred years ago. These weights consist of a pound that is practically the same as our English pound, being but 1 1/2 per cent. heavier. This pound, like ours, is divided into 16 ounces. One hundred Spanish pounds make one quintal, corresponding to our cental or hundredweight. One-quarter of the hundredweight is called the arroba (25 lbs.), each of these various weights being but 1 1/2 per cent. heavier than the corresponding English standard. Five and one-half arrobas make 1 picul. For measuring

length the Filipinos use the vara (.91 yard) divided into 3 feet, the foot being in turn divided into 12 inches.

For measures of capacity the Filipinos use the apatan, which is successively multiplied by 4, 8 and 25 to give the chupa, ganta, and cavan. These standards are as deeply rooted in the daily life of the Filipinos as the yard, inch, pound and ounce are in ours. They are also the standards for the commerce of the Archipelago. This is illustrated in the "Philippine Gossip" of Nov. 5, 1906, where we find a market report for the principal Philippine products, hemp, sugar and copra, all prices being quoted by the picul. So well is this standard understood that it is not considered necessary to mention it, just as we omit "a pound" when speaking of 12-cent cotton.

By a curious chance the column adjoining these quotations in the Manila paper contains the most important part of the recent order abolishing these old standards, and we reproduce both in the accompanying illustration. The products there quoted comprise 89 per cent. of all the exports from the Philippines. If to this we add the value of the tobacco, which is sold by the Spanish quintal (101.4 lbs.) we have 96 1/2 per cent. of all Philippine exports bought and sold by Spanish weights, and classified as follows: Hemp, $19,446,769; sugar, $4,863,865; copra, $4,043,115; tobacco, $2,389,890; all other, $1,173,495; total, $31,917,134, for the year ending June, 1906.

A DAILY SCENE IN MANILA SHOWING USE OF SPANISH WEIGHTS.

Of the hemp, which comprises 61 per cent. of the exports, 95 per cent. was shipped to the United States and Great Britain.

The Spanish weights and measures are used not only in the general commerce of the islands, but also in the daily life of the Filipinos, although the use of the metric system has been compulsory by law since 1849. Take for example the hemp strippers scattered throughout the country. They receive as wages one-half the value of the hemp they strip and generally are paid in produce, very little cash being handled. The stripped hemp is weighed by the arroba and the Filipino receives for his work so

many cavans of rice or other produce, equivalent to an agreed proportion of the hemp produced. Then the small traders carry the hemp to the sea board and in one of our illustrations we see a party of Spaniards and Filipinos photographed as they were weighing by the arroba a lot of sugar and hemp on the Manila docks a few years ago. The arroba standard by which they are weighing is indicated by the letters "Arr" on the scale.

These are the standards that are to be abolished by order of the Philippine Commission on January 1, 1909. According to that decree the hemp-stripper, who now measures his day's work in arrobas of hemp, and his day's pay in cavans of rice, will then be required to measure the former by the kilogramme, and the latter by the litre, and in the decree he finds the following explanation of how to make the change:

> As units of capacity, the cavan of seventy-five liters, or the volume of a cube each side of which is four thousand two hundred and seventeen ten thousandths of a meter. As units of weight, the Spanish arroba of twenty-five Spanish avoirdupois pounds or eleven thousand five hundred grams.

Think of explaining that formula to the Filipino who is steadying the load on the scales in our illustration. It requires no gift of prophecy to determine the result of this order. The Filipinos and all who deal with them will continue to do business by the old Spanish standard. The metric order of Aug. 3, 1906, will be a dead letter from the start. The Filipinos and Philippine merchants will not obey it because they cannot. This is not prophecy. It is as much a statement of fact as that water will run down hill.

If this order of August 3d is not rescinded it will be but another added to the long list of compulsory metric decrees that have been nullified by the higher law of individual habit and common usage. Instead of issuing such futile orders the Commission might spend its time with some profit studying the simple relations between the Spanish and English standards that point the way to ultimate unification.

Turn on the Light.

The charges brought before Postmaster General Cortelyou by President Harvie Jordan of the Southern Cotton Association and Congressman Livingston against the New York Cotton Exchange are of unusual interest and importance. That Exchange is an important part of the highly developed system of marketing the world's cotton crop.

The conditions that make it possible to develop a system of marketing a commodity are summarized by Prof. Chapman of the University of Manchester (Eng.), as follows:

1. The commodity should satisfy a demand that is constant over a fair period and not subject to violent fluctuations.

2. There should be an accurate description or "grading" of the commodity, so that inspection by each buyer may not be necessary.

3. Full and immediate information about facts affecting prices should be made public.

4. There should be facilities for bargaining and payment.

Few commercial products, certainly no other textile product, fulfills these requirements better than cotton, and as a result we have the highly organized system of marketing raw cotton from the time it is grown until it reaches the spinners in all parts of the world. The nature of the business has been well stated by Prof. Chapman:

> It is the business of both buying brokers and selling brokers to know the same things, but not to impart their knowledge, for the object of each is to get the best terms possible from the others. There is, therefore, conflict.

The buying and selling machinery in the form of cotton exchanges, cotton buying associations, rules and contracts that during the last hundred and twenty years have been developed for carrying on this business have necessarily been arbitrary and inflexible in many respects, partaking of the character of the permanent conflict between buyer and seller. Probably there are no more powerful commercial associations than the Liverpool

Cotton Association and the New York Cotton Exchange. These associations have been developed within the cotton trade, but in a large measure independently of the planter, who is the producer, and of the spinner, who is the consumer, of raw cotton. They are associations of the traders, by the traders, and for the traders, in one of the necessaries of life.

It would not be strange if abuses had crept into a system thus developed. It would be surprising if defects did not exist, and in view of the fact that not only the cotton planters and spinners, but every human being who wears clothes is interested in the marketing of cotton, it is of the greatest importance that the defects be discovered and remedied.

The principal charge against the various cotton exchanges has been that they encourage speculation for the profit of the manipulator and at the expense of either the planter or the consumer. In the three European cotton congresses at Zurich, Manchester and Bremen, and in the Cotton Conference at Washington, the two principal grievances were the shortage of cotton and the evils of speculation. The first was voiced by the spinners, but speculation was denounced as an evil by both planters and spinners. Aside from talk, however, nothing has been done to check the evil until the charges by President Jordan and Congressman Livingston were made, and which are as follows:

Washington, D. C., Jan. 2, 1907.

Hon. George B. Cortelyou, Postmaster General, Washington, D. C.

Dear Sir: We, the Hon. L. F. Livingston, M. C., of Georgia, and Harvie Jordan, president of the Southern Cotton Association of Atlanta, Ga., hereby respectfully request the issuance of a fraud order by your department against the use of the United States mails by the officials and members of the New York Cotton Exchange, and present our reason for the same in the following charges as below outlined, and to which we most respectfully invite your careful attention.

Yours truly,

L. F. LIVINGSTON,
HARVIE JORDAN.

Following are the charges:

First—We charge that New York City has ceased to be a commercial spot cotton market, and that the New York Cotton Exchange, operating under its present debased and fraudulent contracts, has developed into a purely speculative or gambling exchange, and that the grades of cotton shipped to New York and tenderable on the contracts under the rules of the New York Cotton Exchange cannot be used for commercial spinning purposes, and that such grades of cotton are used solely to depress the price of spinnable grades in the South, to further the speculative features of the New York Cotton Exchange, to the heavy detriment of the entire legitimate cotton trade of the United States.

Second—We further charge that the said New York Cotton Exchange, through its officers and members, is daily using the United States mails for the purpose of transmitting and advertising their business, to the injury of the legitimate cotton trade of the United States, and we charge that said business is fraudulent and said officials and members of the New York Cotton Exchange should be denied the use of the United States mails. We refer you to copies of letters hereto attached.

Third—We further charge that the quotations sent out daily on the debased contracts of the New York Cotton Exchange exercise a predominating influence over the legitimate cotton trade, to its great detriment and injury.

Fourth—We further charge that New York City has ceased to be a spot cotton market for commercial, spinnable grades of cotton, due to the present debased contracts of the New York Cotton Exchange, and, as proof of the charge, we cite to you the fact that from the first day of September, 1906, to December 31, 1906, there was only delivered from that market 10,046 bales of spot cotton to shippers, out of a total of practically eight million bales of American cotton placed upon the markets of this country at other points.

Fifth—We further charge that under the present debased and fraudulent rules of the New York Cotton Exchange a large number of unspinnable low grades of cotton are tendered on the contracts of said exchange, which are not permitted under the rules of any other cotton exchange in the world, and we affirm that such rules are fraudulent.

Sixth—We charge, further, that the official daily quotations sent out through the United States mails by the officers and members of the New York Cotton Exchange to their customers and others, both as to "futures" and "spot" prices are fraudulent, in that neither represents the true and actual value of spot cotton, but that the same are from $5 to $7.50 a bale less than the market price at which spinnable grades of cotton could be purchased in the South and shipped to New York for tender on said fraudulent contracts. In an exhibit attached hereto, we specifically call your attention to the wide difference existing between quotations of futures market and spot market on December 28, as existing in the New York Cotton Exchange, a difference of 163 points, or $8.15 a bale, said difference clearly showing a fraud. Your attention is also specifically called to the official quotations in said exhibit of the futures market and spot market of the New Orleans Cotton Exchange, noting the close proximity between futures and spots of that market.

Seventh—We further charge that out of the advertised stock of cotton at present stored in the warehouses of New York City—amounting to

114,000 bales—fully 70,000 bales of said cotton is of such inferior grades as to render the staple unfit for spinning or manufacturing purposes, and that a considerable portion of said cotton has been held in said warehouses for years, and is totally unfit for any purpose whatever, except to be tendered on the fraudulent contracts of the New York Cotton Exchange, to the serious detriment and injury of the legitimate cotton trade of the United States. We therefore ask that you, as Postmaster General of the United States, send a representative of your department to the warehouses of New York City and have all the cotton stored there inspected and graded in order to officially determine the character of the unspinnable and unmarketable grades of cotton stored in that market to tender under the fraudulent contracts of the New York Cotton Exchange under the present practices of that exchange.

Your petitioners further state that they have no desire to jeopardize any legitimate transactions that are made through any of the cotton exchanges of this country. This is no fight against the New York Cotton Exchange as an exchange to be used for the purpose of safeguarding, protecting and furthering the legitimate cotton business of the whole country, but the charges here preferred and efforts made are directed solely against any and all debased and fraudulent contracts and transactions which are at present practiced by those who are in authority in making effective the present rules and methods of that exchange, to the detriment and injury of the legitimate cotton trade of the United States.

The importance of the interests affected, the high standing of the men who make these charges, and the forcible and detailed manner in which the charges are framed would seem to make it incumbent on the Washington authorities to take some action in the matter.

If the charges bring about a thorough investigation of the present system of marketing the cotton crop it will have accomplished a great measure of good. But such investigation should be conducted deliberately and scientifically. There should be no sudden and drastic action first and investigation afterwards. Neither should there be any abandonment of the task in response to such a protest as the following, ascribed to Walter C. Hubbard, president of the New York Cotton Exchange:

It is deplorable that such assault upon the New York Cotton Exchange, a chartered institution of more than thirty-five years' standing, founded by merchants of the city; or such implication as to the integrity of its members, should be made under any pretext or for any purpose whatever. Our members are of the best known merchants here, of the trade in the South, and abroad. They are proud of the past, and of the present, of their organization. They are upright business men. They need no defence or apology, and they ask the nature of the charges, which are ignorantly made. They will protect themselves and they indignantly protest against the calumny, which is calculated for their injury.

The question at issue is not the personal character of the members of the New York Cotton Exchange, as President Hubbard seems to believe. It is whether the present system of marketing the raw material for clothing mankind has defects that should be remedied. We need not look very far into the past to find proof that grave defects may exist in great business organizations despite the high standing of their members. These abuses grow from small beginnings and the men who grow up with them learn to look upon them as legitimate methods. Do such abuses exist in the cotton exchanges of the world, at Liverpool, at New Orleans, at Bremen, at New York? The question concerns not only the cotton trade, planters, spinners, weavers and merchants, but all mankind. It is complex and highly technical. Its solution requires time and scientific study. Under these conditions the proper course for the United States Government to follow is to appoint a commission of enquiry. The New York Cotton Exchange should be the first to say, "Turn on the light."

Nine million dollars of United States money is in circulation in Canada.

In 1905 the silk mills of the United States consumed over 14 million pounds of raw and spun silk.

In 1905 there were in the United States 624 establishments devoted exclusively to silk manufacturing. The value of the product amounted to $133,288,072.

It is estimated that the silk industry of the United States gives employment to 79,600 operatives and represents a capital of $109,556,621.

A new building for the weaving school at Chemnitz has just been constructed at a cost of $60,000, and the Government of Saxony has voted a sum of $3,000 annually as a fund for its support.

Seasonable Fabrics.

MEN'S WEAR.

The year just closed has been a prosperous one even to the men's wear woolens section of the market, although the selling agents have been insisting that duplicate orders were slow, and that initial purchases might have been considerably larger.

FIG. 1.

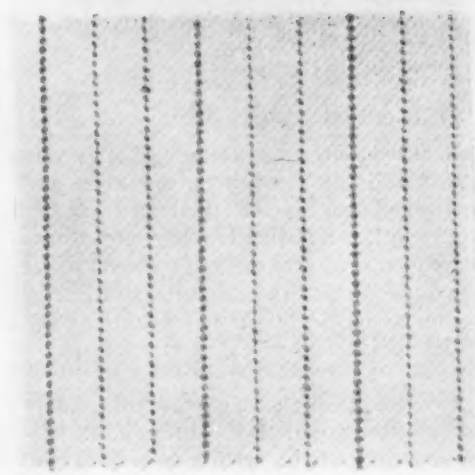


FIG. 2.

This may be true of some lines of woolens, but on the whole it is clearly evident that the volume of business achieved and the balance on the right side of the ledger are fully satisfactory. There is every reason to believe that these prosperous conditions will continue.

The business is transacted on a more stable basis than formerly. When lines are opened, the buyers do not rush and scramble to place their orders, as was witnessed in former years.

There is a certain amount of uncertainty existing concerning the proper values of some of the lines that have been recently opened, and the quotations appear abnormally high.

Most buyers seem to think last year's level of prices to be high enough, without a further boost of 5 to 10 per cent. The support that cotton worsteds have received was only to be expected. For several seasons the request for these low grade goods has been on the increase, and they now constitute the bulk of the orders placed for the South and West.

A number of the most prominent mills have opened their overcoating lines, but it is stated that operations have been of small dimensions for the principal reason that up to the present the clothiers are all at sea as to what style of fabrics will sell in retail channels.

Two of the mills show ultra styles in fancies, similar to the tourist patterns in vogue about two years ago, but the response has by no means been sufficient to warrant bringing out more of the same order.

It is more than probable that the overcoating situation will develop along the lines of plain fabrics, such as meltons and kerseys, with small patterns in fancies added.

Macintosh, Taft & McKenney have opened the H. T. Hayward lines of suitings at 25 to 26 1/2 cents; W. E. Hayward & Co.'s lines at 27 1/2 to 37 1/2 cents; the Charles River Woolen Co.'s fabrics at 23 1/2 to 25 cents; and the Schuster Woolen Co.'s goods at 25 to 26 cents.

D. S. MacKay is showing the 60-inch fancy cassimeres made by the Intervale Mills at 62 1/2 cents.

Curtiss & Warren are showing the Racine thibets at $1.00 and $1.10.

The American Woolen Co., Dept. 4, are showing a line of kerseys from 75 cents to $1.75, and a line of broad cloths from 60 cents to $1.62 1/2.

Wallach, Hoexter & Co. have opened the lines of Raynham twist cassimeres at 89 cents, and the Raynham mixture suitings at 85 cents.

W. W. Capers, Jr., is showing lines of 3/4 hard finished cassimeres at 22 1/2 cents.

Deering, Milliken & Co. show very attractive lines of overcoatings from the Warumbo and Pondicherry mills, prices $1.50 to $2.75.

The Raritan Mills have opened their lines of overcoatings ranging in price from 75 cents to $1.00.

Faulkner, Page & Co. are showing the lines of the Proctorville 15 to 23-ounce all wool overcoatings at $1.10 to $2.25.

The Earnscliffe Worsted Mills are showing 16-ounce all worsted Saxonville mixtures at $1.35 and $1.37 1/2.

M. H. Mienhard & Co. are showing the emerald silk mixtures at 37 1/2 cents.

Metcalf Bros. & Co. are showing lines of overcoatings from $1.25 to $3.25 and thibets from $1.02 1/2 to $1.72 1/2.

Greely, Cushman & Record are showing the overcoating lines of the Oakland fabrics, and the Old Town fancy suitings at 75 cents.

DRESS GOODS.

Only a few of the dress goods manufacturers are in a position to show their fall samples, for the reason that they are not yet through with gathering orders for spring deliveries.

The conditions are sound and the outlook quite satisfactory, both in woolens and worsteds. The trend is towards fancies. Plain fabrics are not quite so prominent as they were a few months ago, although it is said that broad cloths, henriettas, prunellas and plain goods generally are receiving considerable support. Notwithstanding the above statement, it is clearly evident to buyers that the manufacturers and importers are not withholding fancies, but are bringing out novelties in fancies on every possible occasion.

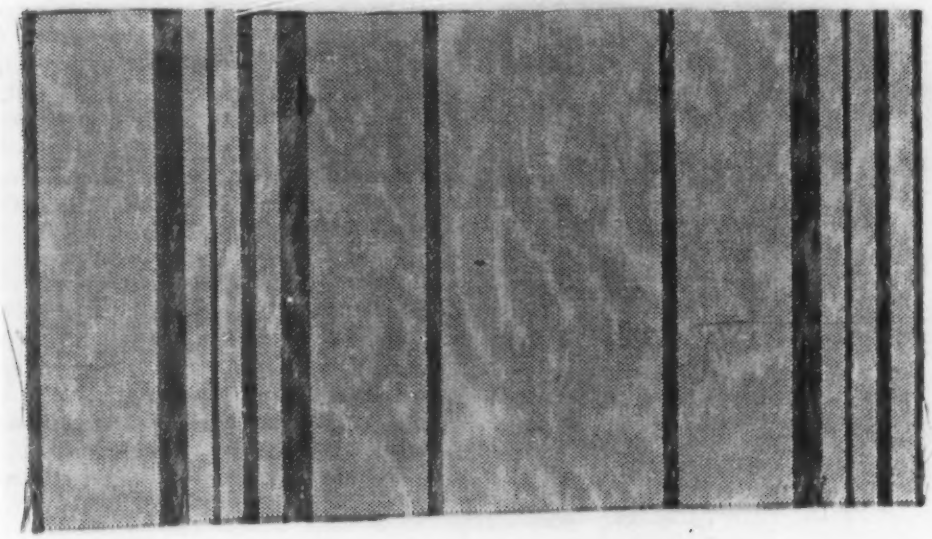


FIG. 3.

It was predicted that light-weight chiffon broad cloths would last throughout the spring season, but the prediction will be fulfilled only to a moderate extent.

There is, however, a constant request for plain staple fabrics such as voiles and panamas, and there is every evidence that these two fabrics and other sheer goods of allied

character will be the only plain color fabrics in large demand by the consumer during the present spring and summer. On the other hand there is a persistent request from the manufacturers for fabrics in grey and tans, in checks and overchecks on the order of Fig. 1. The sample shown is the product of the Saxonia Mills, wool warp and cotton filling, 42 inches wide at 65 cents.

The same goods are styled in stripes, and both checks and stripes have met with decided success.

There is also a strong tendency toward a plain white ground with regular and irregular stripes on the order of Fig. 2. The fabric shown is all wool, the product of the Germania Mills, and sold by Franz Merz (C. A. Auffmordt & Co.), 50 inches wide at $1.15. These fabrics are also produced in broken plaids of light, delicate shades of blue, tan, brown and green, black, blue and white, in narrow, graduated stripes, and are very fine examples of the work of American designers.

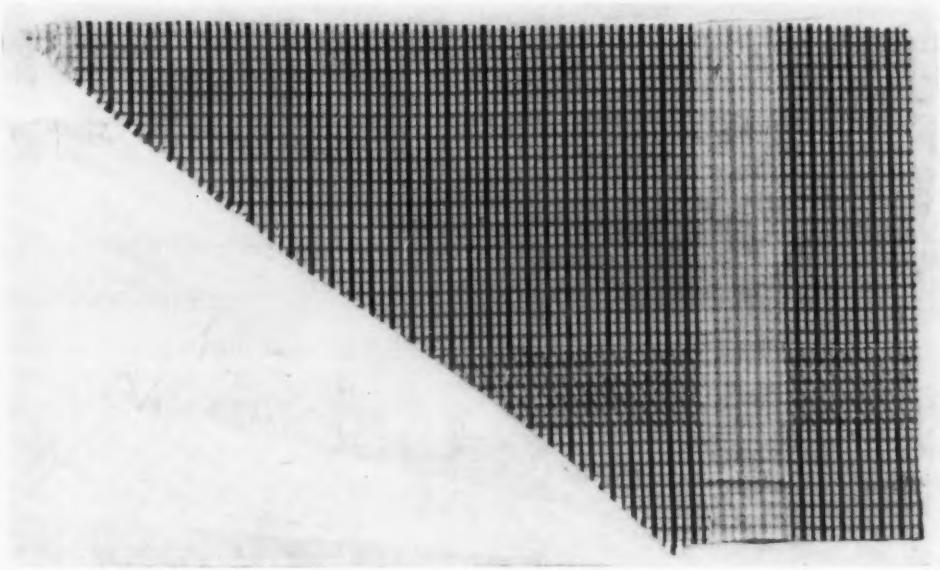


FIG. 4.

SILKS.

The outlook has materially improved notwithstanding the great advance in the price of raw material. Silks promise to be again in the ascendant as the leading fabric for women's spring and summer wear. Prices of necessity had to be advanced all along the line, but this apparently has had no effect in restricting the demand. Practically all of the low grade fancies have been eliminated, although there are some buyers still calling for stuff to retail at 49 cents.

The cutters have placed very substantial orders for broad silks in both black and colors, and the staple 19-inch taffetas have been taken in about normal proportions.

Competition of the keenest sort has existed for years among manufacturers who make up staple taffetas, until there is no profit or any satisfaction in their production.

The depression that existed during nine months of the last year has forced out a large number of the smaller producers, which are always a menace to the trade, as they are often compelled by lack of capital to sell their production at a sacrifice.

The conditions now prevailing are much better, even if the raw material is abnormally high. Fig. 3 shows a beautiful louisine of delicate Persian ground of light blue, rose and white, intermingled with green, red, rose and blue Persian stripes, brought out by Jansen and Pretzfeld, 20 inches wide, at 90 cents. It is said that this number has been sold up and withdrawn. Fig. 4 shows a small black and white irregular check with a large light blue overcheck, being the production of M. C. Migel & Co., 20 inches wide, at 90 cents.

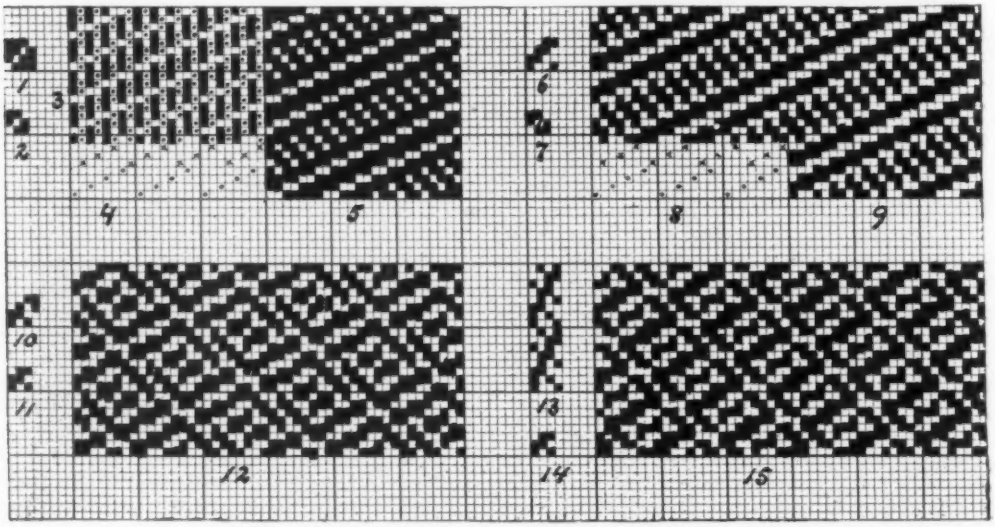
TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

OUR TEXTILE SCHOOL.

COMBINING TWO SMALL TWILLS IN THE FORMATION OF LARGE DESIGNS.

The object of designing these weaves is to produce designs or weaves of a large repeat, possible to be executed in practical work on few harnesses, being weaves which, as will be readily understood, are excellently adopted in the production of jacquard imitation effects.



With reference to twills used in the construction of these weaves, we thus refer to our regular 45° twills, broken twills, corkscrew twills and diagonal twills; combining weaves of either system quoted with weaves of the same system, or combining two weaves, each taken from one or the other of the system of twills, previously referred to.

The gist underlying the formation of these large weaves is, to select two of these foundation twills, each of a different repeat, and afterwards combine these two foundation weaves in the new large effect weave, by means of a "double draw," i. e., draft alternately one warp thread from one weave and one warp thread from the other weave, continuing drafting in this manner until both weaves are used up (the last warp thread of each weave), at the same time, and when then the repeat for the new large weave is obtained.

This method of constructing large effect weaves will be readily understood by the student by carefully studying the few examples of new weaves produced, shown in connection with this lesson, and of which

Weave Fig. 1 shows us one repeat of the $_1—^3$ 4-harness regular twill.

Weave Fig. 2 shows us one repeat of the $_1—^2$ 3-harness twill.

Considering the difference in the repeats in these two weaves, viz: 4 and 3, will give us as the least common multiple of their repeat 12.

Drafting, as mentioned before, alternately one thread from one of these foundation weaves and one thread from the other, for the new large weave, will readily indicate that 12, the common multiple of 4 and 3, times 2, on account of using two weaves in

the construction of the new weaves, = 24 is the repeat of the new weave, with reference to its number of warp threads necessary.

Filling ways, the least common multiple of the two repeats of the foundation weaves, naturally is at the same time the repeat for the new large weave obtained, the same being in the present instance $4 \times 3 = 12$ picks.

Having thus far given a thorough explanation of the principle of construction of these large effect weaves, we will now follow up the subject in connection with Diagram 3, 4 and 5 given, and of which ■ type in Diagram 3 shows us weave number 1 placed on every uneven number of warp thread in the construction of the new large effect weave, whereas [·] type shows us weave Fig. 2 placed on every even number of warp threads in the diagram for the new weave.

Diagram 4 represents the drafting as thus referred to, by means of [·] type for weave number 1 and by means of [×] type for weave number 2.

Fig. 5 shows us one repeat warp ways and two repeats filling ways, of the new weave, executed in one style of type, given in order to show the student the general effect of the new weave in connection with a fabric structure where he may have to use it.

With reference to number of harnesses required for the execution of these large effect weaves, it will be readily understood by the student that this means adding the repeat of the two foundation weaves, and which in our present example will mean $4 + 3 = 7$ harness, this being the number of harnesses required for producing weave, Fig. 5, on the loom, using in connection with it for drawing in draft, the construction draft, Fig. 4, previously referred to.

Diagrams 6 to 9 show us the constructions of a similar large effect weave, and of which Fig. 6 is one repeat of the $^{2}\!-\!_{2}$ 4-harness 45° twill, and weave Fig. 7 one repeat of the $_{1}\!-\!^{2}$ 3-harness 45° twill. Combining these two weaves quoted, in the same way as in connection with the previously given example, alternately taking one warp thread from one weave and one warp thread from the other weave in the construction of the new weave, as shown by means of Diagram 8 and where [·] type refers to weave Fig. 6 and [×] type to weave Fig. 7, will result in the new large weave Fig. 9. The same, on account of using weaves of a similar repeat as in the previously given example, naturally also repeats on 24 warp threads × 12 picks.

Weave Fig. 10 is our $^{2}\!-\!_{2}$ 4-harness broken twill and weave Fig. 11 again $^{2}\!-\!_{1}$ 3-harness regular twill.

The repeat of these two foundation weaves is identical with the repeats of the two foundation weaves used in connection with the two previously explained examples, and for which reason the new large weave as obtained by the combination of weaves 10 and 11 will result in a new weave repeating again on 24 warp threads × 12 picks; the result of the combination being shown in weave Fig. 12.

We next will show in connection with weaves Figs. 13, 14 and 15 the combination of a diagonal-twill in connection with a regular twill.

Weave Fig. 13 is our $^{3}\!-\!_{2}\!-\!^{1}\!-\!_{2}$ 4-harness diagonal, i. e., 63° twill, repeating on 4×8.

Weave Fig. 14 is again our $^{2}\!-\!_{1}$ 3-harness regular twill.

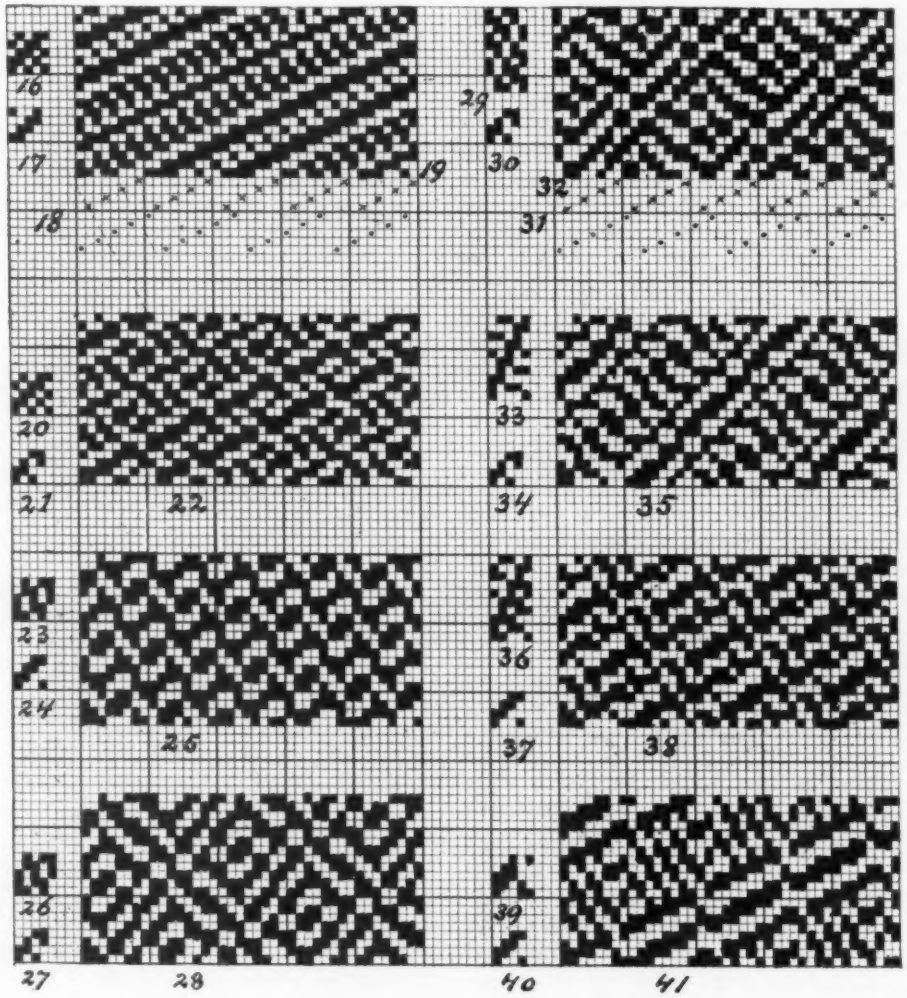
The repeat of weave Fig. 13 is 4 warp threads and the repeat of the weave Fig. 14 is 3 warp threads and for which reason 12 is the common multiple for both weaves, warp ways, which multiplied by 2, on account of drafting alternately one thread from one weave and then one from the other, = 24 warp threads for the repeat of the new large weave, given in connection with diagram Fig. 15.

Considering our foundation weaves filling ways, we find weave Fig. 13 to call for 8 picks and weave Fig. 14 for 3 picks, and when naturally the least common multiple of the two numbers quoted before (8 and 3) i. e., 24, will be the repeat for the new large effect weave Fig. 15, filling ways; weave Fig. 15 thus calling for its repeat 24×24, and for its practical execution on the loom $(4 + 3)$ 7-harness, double draw.

We will next take for our discussion the combination of 4 and 5 harness twills, and which naturally will result in $(4 \times 5 = 20 \times 2 = 40)$ large effect weaves repeating on 40

warp threads; the repeat filling way for said weaves being the lowest common multiple of the repeats of the foundation twills considered filling ways.

To explain the subject in detail to the student, the accompanying plate of weaves Fig. 16 to and inclusive Fig. 41 are given, showing the combination of regular twills with regular twills, regular twills with broken twills, regular twills with corkscrew twills and regular twills with diagonals, respectively.



Weave Fig. 16 is our $^{2}/_{1}-^{1}/_{1}$ 5-harness 45° twill and weave Fig. 17 our $^{2}/_{2}$ 4-harness 45° twill. The combination of these two weaves, drafting alternately one warp thread from weave Fig. 16 and one warp thread from weave Fig. 17, i. e., as shown by means of plan of drafting Fig. 18, and where [·] type refers to warp threads drafted from weave 16 and [×] type to warp threads drafted from weave Fig. 17, in turn will result in the new large effect weave Fig. 19; the same repeating on 40 × 20, one repeat of the new weave only being given in order to not take up too much space on the subject. The drawing in draft for this weave, in connection with practical work on the loom,

corresponds with its draft of construction Fig. 18, calling for (5 + 4) 9-harness fancy-draw.

Weave Fig. 20 corresponds to weave Fig. 16 previously referred to, being used this time in the construction of a new effect in connection with the $^{2}\!-\!_{2}$ 4-harness broken twill, Fig. 21; the combination of these two weaves thus quoted resulting in the new large effect weave given (one repeat only) in connection with Fig. 22, the same having for its draft of construction, as well as drawing in draft on the loom, draft Fig. 18, i. e., the same draft as used in the previously given example.

Weave Fig. 23 is our common 5-harness corkscrew twill, warp effect, and weave Fig. 24 our $^{2}\!-\!_{2}$ 4-harness regular twill, the combination of the two weaves quoted, drafting alternately one warp thread from one weave and one warp thread from the other weave in turn resulting in the new large effect weave Fig. 25; repeating again on 40 × 20 and calling for its draft of construction as well as its drawing in draft on the loom, for draft Fig. 18, previously given.

Fig. 26 is the same 5-harness corkscrew previously referred to, and weave Fig. 27 corresponds to weave Fig. 21, also previously referred to; the combination of these two weaves in turn resulting in the new large effect weave given in Fig. 28, the same in connection with its double draft Fig. 18 calling for 9-harnesses for its execution on the loom.

We will now consider a few examples of diagonal-twills, used in combination with broken twills as well as regular twills, weaves Figs. 32, 35 and 38 being the result of such combinations, viz: weave Fig. 29 is the $_{2}\!-\!^{2}\!-\!_{1}\!-\!^{2}\!-\!_{1}\!-\!^{2}$ 5 × 10-harness diagonal, i. e., 63° steep twill, and weave Fig. 30, our friend, the $^{2}\!-\!_{2}$ 4-harness broken twill. Fig. 31 again shows the double-draw for drafting alternately one warp thread from one foundation weave, one warp thread from the other foundation weave ([·] type in this instance referring to weave Fig. 29 and [×] type to weave Fig. 30) this draw of construction resulting in the new large effect weave Fig. 32. Using our draw of construction of this weave (Fig. 31) for the drawing in draft in practical work at the loom, in turn will call for 9-harnesses there.

Weave Fig. 33 is $^{3}\!-\!_{2}\!-\!^{1}\!-\!_{1}\!-\!^{1}\!-\!_{2}$ 5 × 10 diagonal or 63 ° twill, as we may call it, and Fig. 34 again the 4-harness $^{2}\!-\!_{2}$ broken twill; Fig. 35 being the result of the combination (1:1) of these two foundation weaves, the same repeating on (5 × 4 = 20 × 2 = 40) 40 warp threads and (10 picks and 4 picks = 20 their lowest common multiple) 20 picks.

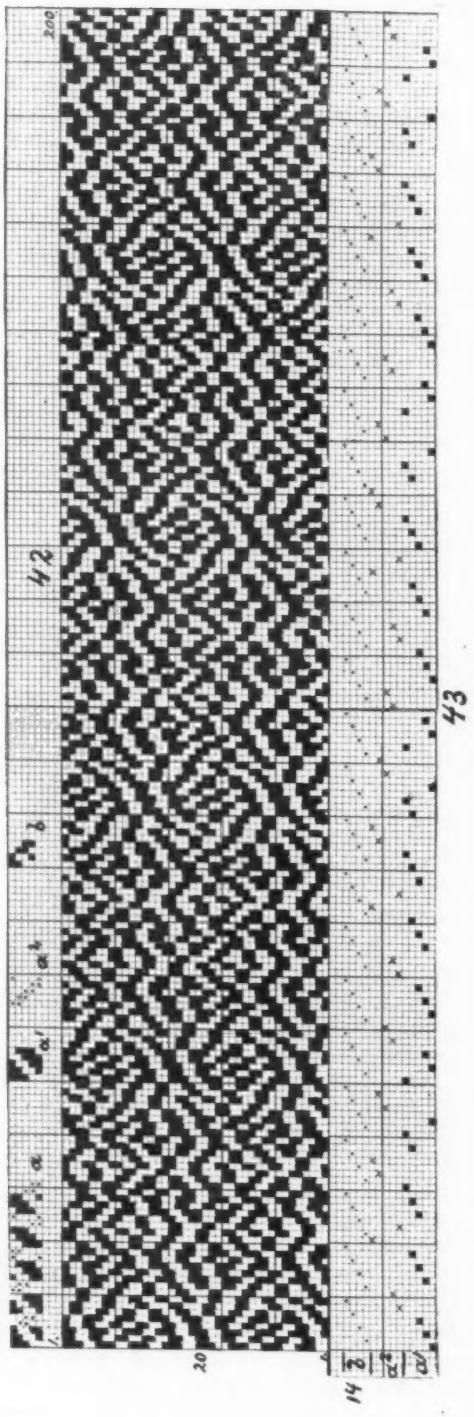
This calculation with reference to the repeat of the new weave also refers to the repeat of the previously given weave Fig. 32, as well as the next example weave Fig. 38, hence no further reference to it is necessary.

Weave Fig. 36 is the $^{3}\!-\!_{2}\!-\!^{1}\!-\!_{1}\!-\!^{2}\!-\!_{1}$ 5 × 10 diagonal, i. e., 63° twill and weave Fig. 37 our $^{2}\!-\!_{2}$ 4-harness common twill, the combination of these two weaves taking one thread alternately from one weave, one thread from the other weave, resulting in turn in the new large effect weave Fig 38.

Weave Fig. 39 is a combination broken twill, viz: 3 threads of the $^{3}\!-\!_{2}$ 5-harness twill drafted from left to right and 2 threads of the $^{2}\!-\!_{3}$ 5-harness twill drafted from right to left: the complete weave as used by us repeating on 5 × 5. Weave Fig. 40 is again the regular $^{2}\!-\!_{2}$ 4-harness twill, and Fig. 41 the result, i. e., large effect weave obtained by the combination of the two foundation weaves (1:1), the same repeating on (5 × 4 = 20 × 2 = 40) 40 warp threads and (5 × 4 = 20) 20 picks.

Provided we continue to construct weave Fig. 39 as a properly broken twill, i. e., until its proper repeat is obtained, the result will be a weave repeating on 25 warp threads × 5 picks, or the weave shown in connection with Diagram 42^{a} and in which the ■ type refers to the drafting of the $_{2}\!-\!^{3}$ 5-harness twill for 3 warp threads from left to right, and the [·] type to the drafting of 2 warp threads from right to left of the $^{2}\!-\!_{3}$ 5-harness twill, as shown by itself (one repeat of the weave) in connection with Diagram 42^{a2}.

42^{b} is one repeat of the $_{2}\!-\!^{2}$ 4-harness broken twill, several times previously referred to already. Combining weave Fig. 42^{a} and weave Fig. 42^{b}, alternately one warp thread from one weave, one warp thread



from the other weave, in turn will result in the new large weave effect Fig. 42, repeating on 200 warp threads × 20 picks, and which means of its proper fancy drawing in draft (at the same time its draft of construction) as given in connection with Fig. 43, can be woven on 14 harnesses.

It will be an excellent lesson for the student to carefully consider this drawing in draft, i. e., draft of construction, Fig. 43, since a proper understanding of it will always guide him in making out a drawing in draft for similar combination weaves, i. e., weaves having 2 or more foundation weaves used in their construction, in a manner that said draft is readily understood by the weaver, i. e., a practical drawing in draft in place of a complicated one. To simplify the study of construction of this drawing in draft, we have the same executed in three different kinds of type, and of which ■ type refers to foundation weave Fig. 42^{a1}, [x] type in the draft referring to foundation weave Fig. 42^{a2}, and finally [·] type in the draft referring to foundation weave 42^{b}.

Separating each weave by itself on its proper set of harnesses in its drawing in draft will simplify this draft, whereas if we would have proceeded to reduce the draft, from weave 42 after the common rule "put every warp thread interlacing throughout one repeat of the filling different than any warp thread used before, on a separate harness," would result in a drawing in draft impossible to be used by the weaver on account of being too complicated; whereas, dividing our 14 harnesses in three sets of harnesses (5-5-4) and using each foundation twill for its respective set of harnesses will greatly simplify the affair, bringing the draft within the scope of comprehension by the weaver, and when natural instinct will greatly assist him in the affair.

The oldest and most profitable railroads in Cuba are owned and operated by British capital.

The total British investment in Cuba is estimated at $100,000,000 as against $120,000,000 of American money.

A NOVEL SHUTTLE-POSITIONING DEVICE FOR LOOMS.

The object of the device is to properly box the shuttle, if such, for one reason or the other (the shuttle not completely entering the box, or rebounding on account of excessive force) is not the case. Although this proper boxing of the shuttle is desired in connection with our regular looms in order to have them run properly, such is an absolute necessity in connection with our automatic filling feeders and when the shuttle should be in a position exactly beneath the bobbin holder when the mechanism sends a full bobbin in the shuttle to take the place of the one spent.

If, however, the shuttle is so far out of the box that the mechanism cannot operate to properly box the shuttle, the same then operates through suitable connections to throw the belt on the loose pulley, in turn arresting the running of the loom and prevents a shuttle smash on account of the insufficient force for throwing the shuttle on the next pick.

Fig. 2

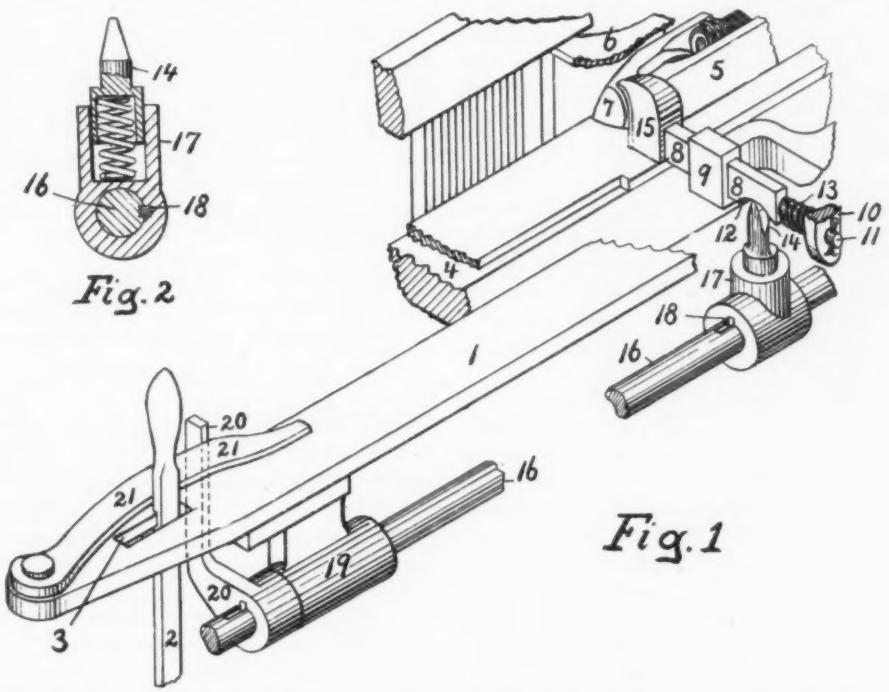


Fig. 1

Of the accompanying illustrations, Fig. 1 shows the new shuttle positioning mechanism, in perspective, showing also those portions of the loom to which the new device more particularly refers. Fig. 2 is an enlarged detail view—compared to Fig. 1—partly in section, showing the stop-pin and its connection to the rocker shaft.

Numerals of reference in the illustrations indicate thus: 1 is the breast beam of a loom, shown broken away at the right hand side, in order to be able to more clearly see the new shuttle positioning device. 2 shows us the shipper lever, extending through and working in slot 3.

A portion of the lay is shown at 4, and a portion of the shuttle, 5, is shown in the shuttle-box, 6, with its ends, 7, projecting slightly out of the same.

THE NEW DEVICE.

The same consists in a shuttle feeler, i. e., positioning arm, 8, set at a right angle to the breast beam, 1, said positioning arm being movable hung in bearings, 9 and 10, secured to the breast beam. The outmost portion of the positioning arm is formed in

a rod, 11, and around which, between bearing, 10, and the shoulder, 12, of the positioning arm, 8, is wound on a stiff coil spring, 13, and which in normal position holds the arm, 8, in its outward position against the stop-pin, 14.

The other end of arm, 8, i. e., the one next to the shuttle, is formed into a shoe, 15, faced with leather on its side as coming in contact with the shuttle, if the latter is not properly boxed. Provided the shuttle is only slightly out of its true position in the box, said shoe, 15, will then come in contact with the tapering end, 7, of the shuttle (as shown in our diagram) and in turn, as will be readily understood, force the shuttle back in its proper position in the box.

THE STOP MOTION.

The arresting of the running of the loom, provided the shuttle is too far out of the box, is accomplished by the following mechanism. The portion of the arm, 8, next to the spring, 13, is on its underside recessed and provided with a groove, ending in shoulder, 12.

Connected to the rocker-shaft, 16, is a guide-collar, 17, and in which collar the stop-pin, 14, works, which is normally held in its outward position against the said arm, 8, by the tension of a coil-spring located in said collar, 17.

This guide-collar is secured by means of a latch key, 18, to the rocker shaft, 16, as held by a bearing on either side of the loom (only one of which (19) is shown) against the breast beam, 1. On the outside end of the bearing, a knock-off finger, 20, is keyed on the rocker shaft, one end of said finger, 20, extending upward so as to engage with arm, 21, which operates the shipper lever, 2, and in turn throws the belt on the loose pulley, provided the shuttle, 5, extends too far out of the box, i. e., that the shoe, 15, does not come in contact with the tapering, i. e., beveled end of the shuttle, but hits the latter on its broad side, the shuttle then striking against shoe, 15, i. e., arm, 8, forcing the latter backward against the tension of its spring, 13, causing in turn the notch, 12, to engage the stop-pin, 14, turning the same forward and consequently rotates the rocker-shaft, 16, the movement of which, through finger, 20, and arm, 21, as previously referred to, operates the shipper lever, 2, and in turn stops the loom.

A Greasy Scum.

Editor Textile World Record:

On page 104 of your December issue there was an article on finishing cotton goods in which mention was made of "Granulated Carbonate of Soda" as a remedy for the greasy scum forming on the soap liquor where hard water is used. Is this a special brand, and if so who makes it?

Natrum (793).

In the article referred to mention should have been made to the Holbrook Mfg. Co., 466 Washington St., New York, handle this material. The name "Granulated Carbonate of Soda" is copyrighted by them, and the abbreviated form "Gran-Carb-Soda" is a trade-mark. Some of the information bearing on this point was taken from a circular on "hard water," issued by the Holbrook Manufacturing Co., which we believe may be had upon application.

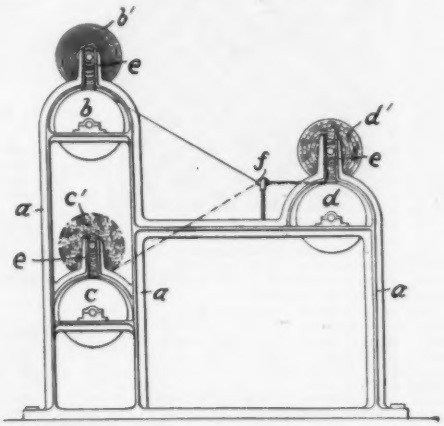
AN IMPROVED METHOD OF WINDING SILK IN ORDER TO FACILITATE SCOURING, DEGUMMING, DYEING AND BLEACHING.

It is well known that silk in the operations thus quoted shrinks, for which reason, if silk in the shape of bobbins or spools is subjected to these operations, the shape of said bobbins or spools is distorted, it becoming very hard besides reduced in its size, assuming a condition in which the soap solution, dye, or any other liquid as required to be used in connection with one or the other processes quoted, cannot penetrate through the body of the bobbin in a satisfactory manner. For this reason, silk thus far has not been degummed, scoured or dyed on bobbins or spools, as is done right along in connection with wool, worsted or cotton yarn, the silk being subjected to the processes quoted in the shape of hanks or skeins, a feature which certainly is more or less a disadvantage, more particularly so with fine counts and more so if dealing with non-twisted silk.

To overcome this disadvantage, is the object of one of the latest French inventions, the gist of which consists in winding on the bobbin or spool simultaneously with the silk, a cotton thread, i. e., a thread which will not shrink like silk in the scouring, degumming,

dyeing or bleaching operations, in turn permitting the silk to be thus treated in the shape of bobbins or spools.

The accompanying illustration shows us the apparatus necessary for carrying on the process, in its longitudinal elevation, and in which a indicates the frame of the machine, revolubly mounted in which are three cylinders, b, c and d respectively, and which are made to rotate at a uniform surface speed. Each one of these cylinders, b, c and d, in turn drives by contact, bobbins, b′, c′ and d′ respectively, their shafts being held in guide-forks, e, permitting in turn the bobbin to rise or fall according to the amount of material wound on it. One of these bobbins, for example, bobbin, b′, let it be understood, carries the silk yarn shown in this instance by means of solid black lines, where bobbin, c′, is to carry the cotton yarn, shown



in this instance by means of dot and dash lines, both bobbins, b′ and c′, respectively being made to revolve at uniform surface speed, the two threads as coming from the respective bobbins in front, passing through guide-eye, f, and from there on to the bobbin, d′, and on which they are wound in unison.

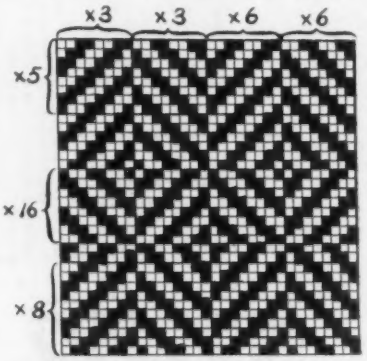
When the latter is full, it is simply lifted out of its forks, e, and put through the desired operation, as the case may require, after which it then is replaced in the machine and by rotating the cylinders, b, c and d, in a reversed condition, the silk and cotton wound on bobbins, b′ and c′, respectively.

The cotton thread as wound with the silk, more particularly if the bobbin is cross-wound, forms a trellis interposed between the spirals and convolutions of the silk, for which reason said bobbins are rendered readily permeable, besides keeping their shape during the operation of scouring, degumming, bleaching, dyeing, whichever may be employed.

FOREIGN NOVELTIES.

Woolen Cheviot Suiting.

Complete Weave. Repeat 144×156



Warp—2160 ends, 8 harness, fancy draw.
Reed—15½×2=69½ inches wide in loom.
Dress—

4 ends, 3½ run, woolen cheviot yarn, olive mix .....=4 ends
1 end, 2 ply, 5 run, woolen cheviot yarn, yellow, red and white .....=1 end
2 ends, 2 ply, 5 run, woolen yarn, olive green and white..=2 ends
1 end, 2 ply, 5 run, woolen yarn, green and white .....=1 end
3 ends, 2 ply, 5 run, woolen yarn, olive green and white..=3 ends
1 end, 2 ply, 5 run, woolen yarn, yellow, red and white ..=1 end
2 ends, 2 ply, 5 run, woolen yarn, dark green.....=2 ends
2 ends, 3½ run woolen cheviot yarn, olive mix.....=2 ends
1 end, 2 ply, 5 run, woolen yarn, yellow, red and white ..=1 end
2 ends, 2 ply, 5 run, woolen yarn, olive green and white=..2 ends
1 end, 2 ply, 5 run, woolen yarn, green and white.....=1 end
3 ends, 2 ply, 5 run, woolen yarn, olive green and white..=3 ends
1 end, 2/52s, worsted, black and yellow, twisted over with 2/25s worsted, red.....=1 end
4 ends, 3½ run, woolen cheviot yarn, olive mix.....=4 ends
1 end, 2 ply, 5 run woolen yarn, yellow, red and white...=1 end
2 ends, 2 ply, 5 run, woolen yarn, olive green and white..=2 ends
1 end, 2 ply, 5 run, woolen yarn, green and white.....=1 end
2 ends, 2 ply, 5 run woolen yarn, olive green and white...=2 ends
2 ends, 2 ply, 5 run, woolen yarn, yellow and blue.....=2 ends

4 ends, 3½ run, woolen cheviot yarn, olive mix
1 end, 2 ply, 5 run, woolen yarn, yellow, red and white
2 ends, 2 ply, 5 run, woolen yarn, olive green and white
1 end, 2 ply, 5 run, woolen yarn, green and white
3 ends, 2 ply, 5 run, woolen yarn, olive green and white
1 end, 2/52s worsted, black and yellow, twisted over with 22/25s worsted, red
4 ends, 3½ run, woolen cheviot yarn, olive mix
1 end, 2 ply 5 run, woolen yarn, yellow, red and white
2 ends, 2 ply, 5 run, woolen yarn, olive green and white
1 end, 2 ply, 5 run, woolen yarn, green and white
3 ends, 2 ply, 5 run, woolen yarn, olive green and white
1 end, 2 ply, 5 run, woolen yarn, olive green and white

} × 2 = 48 ends

4 ends, 3¾ run, woolen cheviot yarn, olive mix .....=4 ends
1 end, 2 ply, 5 run, woolen yarn, yellow, red and white..=1 end
2 ends, 2 ply, 5 run, woolen yarn, olive green and white..=2 ends
1 end, 2 ply, 5 run, woolen yarn, green and white.....=1 end
3 ends, 2 ply, 5 run, woolen yarn, olive green and white..=3 ends
1 end, 2/52s worsted, black and yellow, twisted over with 2/25s worsted, red.....=1 end

Repeat of pattern: 96 ends

Filling—37 picks per inch, arranged thus:

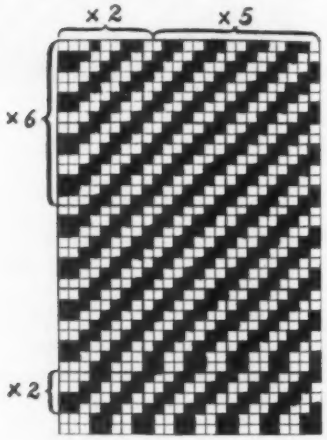
2 picks, 2 ply, 5 run, woolen cheviot yarn, black and brown=2 picks
8 picks, 2/30s worsted, black and white, twisted over with single 15s worsted, black .....=8 picks
8 picks, 2¾ run, woolen cheviot yarn, black.....=8 picks
8 picks, 2/30s worsted, black and white, twisted over single 15s worsted, black .....=8 picks
2 picks, 2 ply, 5 run, woolen cheviot yarn, light green...=2 picks
6 picks, 2¾ run, woolen cheviot yarn, black.....=6 picks
8 picks, 2/30s worsted, black and white, twisted over with single 15s worsted, black.. } × 5 = 80 picks
8 picks, 2¾ run, woolen cheviot yarn, black...
8 picks, 2/30s worsted, black and white, twisted over with single 15s worsted, black.....=8 picks
6 picks, 2¾ run, woolen cheviot yarn, black.....=6 picks

Repeat of pattern: 128 picks

Filling—Woolen cheviot finish, scour well, full slightly, clip on shear, press, steam lustre, press, steam.

Worsted Suiting.

Complete Weave—Repeat 98×116.



Warp—3180 ends.

Reed—×12
1 dent @ 1 end
1 dent @ 4 ends.
1 dent @ 5 ends.
21 dents @ 4 ends.
1 dent @ 4 ends.

25 dents=98 ends=one repeat of pattern.

Dress—

1 end, 2/32s worsted, black and drab.....=1 end
2 ends, 2/26s worsted, black .....=2 ends
1 end, 2/32s worsted, black and brown .....=1 end
1 end, 2/26s worsted, dark brown .....=1 end
1 end, 2/32s worsted, black and drab.....=1 end
1 end, 2/22s worsted, dark brown .....=1 end
1 end, 2/32s worsted, black and brown .....=1 end
1 end, 2/26s worsted, dark brown.....=1 end
1 end, 2/36s worsted, black and drab.....=1 end
2 ends, 2/26s worsted, black.....=2 ends
1 end, 2/32s worsted, black and brown .....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and drab.....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and brown.....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and drab.....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and brown.....
1 end, 2/26s worsted, dark brown.....
} × 10 = 40 ends
1 end, 2/32s worsted, black and brown.....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and drab.....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and brown.....
1 end, 2/26s worsted, dark brown.....
} × 3 = 12 ends
1 end, 2/32s worsted, black and brown.....=1 end
1 end, 2/26s worsted, dark brown.....=1 end
1 end, 2/32s worsted, black and drab.....=1 end
1 end, 2/26s worsted, dark brown.....=1 end
1 end, 2/32s worsted, black and brown.....=1 end
1 end, 2/26s worsted, dark brown.....=1 end
1 end, 2/32s worsted, black and drab.....=1 end
1 end, 2/36s worsted, green.....=1 end
1 end, 2/32s worsted, black and brown.....=1 end
1 end, 2/36s worsted, green.....=1 end
1 end, 2/32s worsted, black and drab.....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and brown.....
1 end, 2/26s worsted, dark brown.....
} × 2 = 8 ends
1 end, 2/32s worsted, black and drab.....=1 end
1 end, 2/36s worsted, dark blue.....=1 end
1 end, 2/32s worsted, black and brown.....=1 end
1 end, 2/36s worsted dark blue.....=1 end
1 end, 2/32s worsted, black and drab.....
1 end, 2/26s worsted, dark brown.....
1 end, 2/32s worsted, black and brown.....
1 end, 2/26s worsted, dark brown.....
} × 3 = 12 ends

Repeat of pattern: 98 ends

Filling—52 picks per inch, arranged thus:

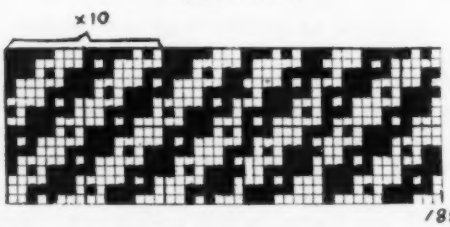
1 pick, 2/26s worsted, black.....=1 pick
1 pick, 2/32s worsted black and drab.....=1 pick
1 pick, 2/26s worsted, dark brown .....=1 pick
1 pick, 2/32s worsted, black and brown..=1 pick
1 pick, 2/26s worsted, dark brown .....=1 pick
1 pick, 2/32s worsted, black and drab.....=1 pick
1 pick, 2/26s worsted, dark brown.....=1 pick
1 pick, 2/32s worsted, black and brown.....=1 pick
2 picks, 2/26s worsted, black .....=2 picks
1 pick, 2/32s worsted, black and drab.....
1 pick, 2/26s worsted, dark brown.....
1 pick, 1/32s worsted, black and brown.....
1 pick, 2/26s worsted, dark brown .....
} × 7 = 28 picks
1 pick, 2/32s worsted, black and drab.....=1 pick
1 pick, 2/26s worsted, green.....=1 pick
1 pick, 2/32s worsted, black and brown.....=1 pick
1 pick, 2/26s worsted, green.....=1 pick
1 pick, 2/32s worsted, black and drab.....
1 pick, 2/26s worsted, dark brown .....
1 pick, 2/32s worsted, black and brown.....
1 pick, 2/26s worsted, dark brown .....
} × 4 = 16 picks
1 pick, 2/32s worsted, black and drab.....
1 pick, 2/32s worsted, black and brown .....
2 picks, 2/26s worsted, dark brown.....
} × 2 = 8 picks
1 pick, 2/32s worsted, black and drab.....
1 pick, 2/26s worsted, dark brown.....
1 pick, 2/32s worsted, black and brown.....
1 pick, 2/26s worsted, dark brown .....
} × 13 = 52 picks
1 pick, 2/32s worsted, black and drab.....=1 pick
1 pick, 2/26s worsted, dark brown.....=1 pick
1 pick, 2/32s worsted, black and brown .....=1 pick
1 pick, 2/26s worsted, black.....=1 pick

Repeat of pattern: 122 picks

Finish—Worsted finish, 56 inches wide.

Worsted Suiting.

Repeat 188×16.



Warp—7144 ends, 16 harness, fancy draw.
Reed—14×18=64 inches wide in loom.

Dress—

16 ends, 2/48s worsted, dark gray .....=16 ends
4 ends, 2/48s worsted, medium gray ..... } × 4 = 24 ends
4 ends, 2/48s worsted, dark gray..... }
4 ends, 2/48s worsted, medium gray .....= 4 ends
16 ends, 2/48s worsted, dark gray.....=16 ends
12 ends, 2/48s worsted, medium gray..... } × 4 = 96 ends
12 ends, 2/48s worsted, dark gray ..... }
10 ends, 2/48s worsted, medium gray.....=10 ends
2 ends, 2/48s worsted, green ....= 2 ends
8 ends, 2/48s worsted, dark gray.....= 8 ends
2 ends, 2/48s worsted, black and red twist.....= 2 ends
8 ends, 2/49s worsted, medium gray .....= 8 ends
2 ends, 2/48s worsted, violet .....= 2 ends

Complete repeat: 188 ends

Filling—94 picks per inch, arrranged thus:

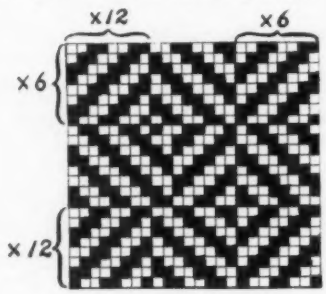
12 picks, 2/48s worsted, dark gray.
12 picks, 2/48s worsted, medium gray.

24 picks in repeat of pattern.

Finish—Worsted finish, 56 inches wide.

Worsted Melton Suiting.

Complete Weave.—Repeat 152×152.



Warp—4050 ends, 8 harness, fancy draw.

Reed—14½×4=69 inches wide in loom.

Dress—

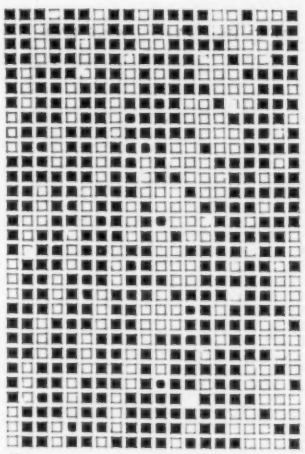
1 end, 2/52s worsted, black and white, twisted over with 64s worsted, olive ..... } × 2 = 4 } × 2 = 12 }
1 end, 2/40s worsted, black..... }
2 ends, 2/40s worsted, black .....=2 } × 4 = 64 ends
1 end, 2/52s worsted, black and white, twisted over with 64s worsted, olive ..... } × 2 = 4 }
1 end, 2/40s worsted, black ....
1 end, 2/52s worsted, gray and white..... } × 8=16
1 end, 2/40s worsted, black..... }
1 end, 2/52s worsted, black and white, twisted over with 64s worsted, olive ..... } × 4 = 8 ends
1 end, 2/40s worsted, black..... }
1 end, 2/52s worsted, gray and white..... } × 4 = 8 ends
1 end, 2/40s worsted, black..... }
1 end, 2/52s worsted, black and white, twisted over with 64s worsted, olive..... } × 3 = 6 ends
1 end, 2/40s worsted, black ..... }
1 end, 2/52s worsted, black and white, twisted over with 64s worsted, olive.....=1 end
1 end, 2/52s worsted, green.....=1 end
1 end, 2/52s worsted, black and white, twisted over with 64s, worsted, olive ..... } × 3 = 6 ends
1 end, 2/40s worsted, black ..... }
1 end, 2/52s worsted, black and white, twisted over with 64s worsted, olive ....=1 end
1 end, 2/52s worsted, green.....1 end
1 end, 2/52s worsted, gray and white .... } × 4=8 } × 2=32 ends
1 end, 2/40s worsted, black..... }
1 end, 2/52s worsted, black and white, twisted over with 64s worsted olive } × 4=8 }
1 end, 2/40s worsted, black..... }
1 end, 2/52s worsted, gray and white..... } × 4 = 8 ends
1 end, 2/40s worsted, black .... }
1 end, 2/52s worsted, gray and white..... } × 4 — 8 ends
1 end, 2/40s worsted, black..... ..... }

Repeat of pattern: 152 ends

Filling—58 picks per inch, same arrangement of colors and counts of yarn, as used for warp.

Finish—Worsted melton finish, scour well, full slightly, clip on shear, press, 56 inches wide.

Fancy Worsted Trousering.



Complete Weave.
Repeat 20×30.

Warp—5840 threads, 20 harness, straight draw.

Reed— 18 × 5 = 66" wide in loom.

Dress—

10 ends, 2/80s worsted, white and black.
30 ends, 2/80s worsted, black.

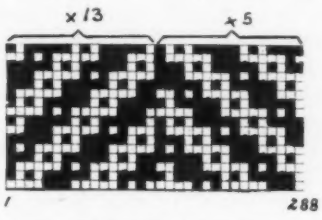
40 ends, repeat of pattern.

Filling—90 picks per inch, all 2/60s worsted, black.

Finish—Worsted finish, 56 inches wide.

Worsted Melton Suiting.

Complete Weave. Repeat 288×16.



Warp—8176 ends, 16 harness, fancy draw.

Reed—15½×8=66 inches wide.

Dress—

6 ends, 2/64s worsted, dark blue .....= 6 ends
86 ends, 2/64s worsted, brown yellow mix.....=86 ends
10 ends, 2/64s worsted, dark blue .....=10 ends
22 ends, 2/64s worsted, brown yellow mix .....=22 ends
1 end, 2/64s worsted, black and white silk twist } × 4 = 64 ends
15 ends, 2/64s worsted, brown yellow mix..... }
10 ends, 2/64s worsted, dark blue .....=10 ends
86 ends, 2/64s worsted, brown yellow mix.....=86 ends
4 ends, 2/64s worsted, dark blue .....= 4 ends

Repeat of pattern: 288 ends

Filling—160 picks, all plain black, 2/64s worsted.

Finish—Worsted melton finish, scour well, full slightly, clip on shear, press and steam.

THE FINISHING OF COTTON GOODS.

THE DRYING PROCESS, CYLINDER OR DRUM DRYING MACHINERY, TENTERING MACHINES, VENTILATING, THE DAMPENING PROCESS AND MACHINERY.

(Continued from December.)

We now come to consider a most important item with reference to the finishing of cotton goods, viz: their drying after starching, i. e., the water as used in the preparation of the starch must be eliminated, and which is done either on a tentering or a cylinder drying machine. The same also refers to goods after undergoing the operations of bleaching or dyeing before stiffening.

Fabrics dried upon a cylinder drying machine become smoother, but the thread is pressed flat. A subsequent steaming of the fabric, if it was finished with starch, flour, or glue, swells these substances, and good results are often obtained by a good steaming and by storing the steamed fabric in rolls in a humid or cool place.

A disadvantage to cylinder drying machines is that it leaves the goods after drying of more or less uneven width, for the reason that the goods pass through the drying process without being stretched widthways.

There are two kinds of cylinder drying machines, viz., such as have the cylinders in a range, or "horizontal machines," and such as are known as "upright machines;" which one to use depending on floor space available, the latter kind, as will be readily understood, calling for less floor space.

Under ordinary conditions, a horizontal cylinder drying machine is composed of a series of cylinders, ranging from 4 to 24 in number, they being generally placed so as to alternate, that is to say, that above the first two cylinders placed in a straight line, there is a third cylinder, which forms an equilateral triangle with the preceding ones, and which constitutes the beginning of the upper series of cylinders.

Drying cylinders are made of a cylindrical bent metal sheet of larger or smaller diameter. The interior of the cylinder is hollow and filled with steam, which by beating on its sides heats them, and consequently evaporates the water in the fabric as then in immediate contact with the outside surface of the cylinder. The steam enters the cylinder on one side, the condensed water escaping on the other side. The means for lifting and discharging the exhaust steam from the cylinder is done either by means of a bucket scoop, or as done in connection by means of the cylinder drying machinery, as built by the Textile Finishing Machinery Co., of Providence, R. I., by means of spiral scoops which is a patent arrangement of that concern, and has for its object to increase the drying capacity of that machine considerably, at the same time materially decreasing the steam pressure and amount of steam necessary to do the drying. In addition to these advantages, the spiral scoop enables goods to be dried at a lower temperature, which leaves them softer and more mellow, as they are not baked by excessive heat. There is very much less or no liability of fugitive colors marking off and of starch sticking to the first few cylinders, which is alone of the greatest value in drying many classes of goods. From a mechanical standpoint, it is possible to fasten the spiral scoop in a cylinder far more strongly than the bucket scoop, so that the old trouble of scoops becoming loose in the cylinders has been obviated. Spiral scoops can be readily put into cylinders of any face or diameter and are especially advantageous in cylinders of wide face or large diameter.

The drying cylinders are revolved simultaneously with the fabric as passing over it, and which has to be dried, the speed given to the machine being such that the fabric under operation is perfectly dry on leaving the cylinders. Drying cylinders are made of cast-iron, sheet iron, copper, tinned copper and in connection with cheaper makes, of tinned iron, the best being made of copper or tinned copper.

Before going into detail with reference to the construction of drying machinery, it will be readily understood that under similar conditions, a light woven fabric will dry more easily than a thick one, that is, the quantity of water to be evaporated being the same in

both structures; for the fact that we have to consider the penetrating effect of the liquid and the surface to be dried. Again an ordinary starched fabric will dry quicker than a heavily starched one. Provided fatty matters are added to the filling compound, the drying must be done more thoroughly than if such materials are not used.

We mentioned before that it now and then may occur that the size sticks to the cylinders, and for which reason the first two or three cylinders of the machine are then covered with a few rounds of calico to prevent the starched goods from adhering to the metal. If this precaution is not taken, there is then a chance of spoiling fabrics, since the starch will be deposited on the goods under

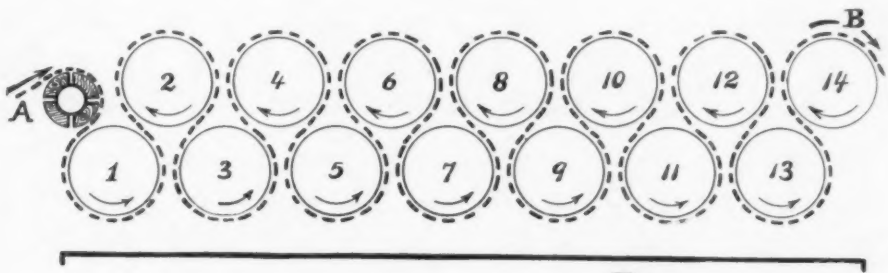


Fig. 1

operation in patches. Work must be suspended in order to clean the cylinders, but since this cannot be done well when they are hot, we must necessarily wait until they cool, with a consequent loss in production to the mill. For colored fabrics the contact of the drying cylinders with the fabric has great influence upon the color, the latter losing its lustre, which however generally reappears after the fabric cools, but sometimes its brilliancy is diminished and never can be restored. The advantages of cylinder drying are economy of fuel, facility and rapidity of drying and production.

The accompanying illustration, Fig. 1, is a diagram of such a horizontal cylinder drying machine, clearly showing the placement of the drying cylinders in the two tiers as mentioned before. We have shown 14 cylinders, i. e., 7 in each row, although it will be readily understood that any number of these cylinders can be used; which number to use depending on the output of the machine required. Arrow A indicates the entering of the cloth into the machine over a stretching roll, in order to keep the cloth evenly stretched over its width before coming in contact with the first drying cylinder. We have numbered the fourteen drying cylinders respectively, showing by means of arrow their direction of rotation, the cloth as passing through the machines, being shown by means of dotted lines; arrow B indicating the cloth leaving the machine, and where in turn they can be guided by suitable arrangement to a folder, or rolled up, or to wherever required.

In this cylinder drying machine shown, as well as any horizontal cylinder drying machines built upon this principle, containing more or less rolls, the cloth in passing over these cylinders will be dried both by the contact of its face and back with the cylinders, i. e., cylinder, 1, and every uneven number of cylinder comes in contact, i. e., works on one side of the cloth, whereas cylinder number, 2, and every even number cylinder in our diagram comes in contact with the other side of the cloth, that is, both sides of the fabric come in contact with alternate drying cylinders from the minute the cloth enters the machine until it leaves it.

In connection with some fabrics, like face raised goods—quilts, corduroys, etc., etc., the contact of the face of the fabric with the drying cylinders, as will be readily understood, will injure the face of the fabric, and for which reason, a series of winces or wood-lagged cylinders, also called binding rollers,

are then used in connection with such a horizontal cylinder drying machine, in turn bringing one side of the fabric only in contact with the cylinders of the horizontal drying machine.

In order to explain the subject, diagram, Fig. 2, has been prepared, and which in turn will readily explain the affair. Examining this illustration, we find 14 drying cylinders, numbered respectively, 1 to 14, used. This, however, is only an arbitrary number used by us, since any reasonable number of drying cylinders may be substituted, i. e., are used in practical work. Arrow A indicates the entering of the fabric to be dried into the machine over suitably situated stretching and below the two series of drying cylinders, as shown in illustration, Fig. 2, the cloth then will come only in contact with one of its sides with the drying cylinders. The same result would be obtained if placing said binding rolls between the two series of drying cylinders.

Fig. 3 shows us what we term an upright cylinder drying machine, i. e., a cylinder drying machine, in which the drying cylinders are arranged vertically, such disposition of the drying cylinders being preferable when floor space in the mill is limited. These upright drying cylinder machines are built either with 1, 2 or 3 columns, according to capacity of machine required; containing re-

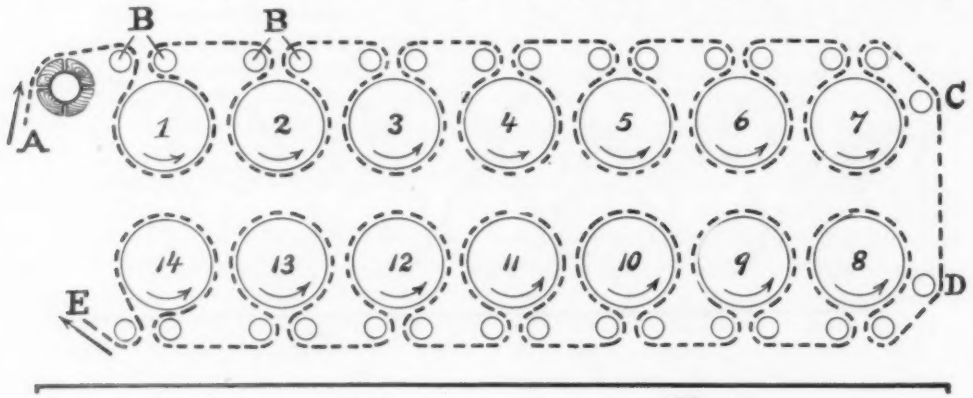


Fig. 2

rollers. B indicates the winces or binding rollers, previously referred to. C and D are guide rollers suitably situated in the framing of the machine, and placed there for guiding the fabric over one tier of drying cylinders to the other tier.

The run of the cloth through the machine is shown by means of dotted lines, and will readily explain the subject, arrow E indicating the fabric leaving the machine. Arrows in circles, representing the drying cylinders, indicate the rotation of these cylinders.

In the same manner as we have shown the fabric entering on the upper tier of drying cylinders, the run of the fabric through the machine can be arranged in a reverse direction, in the latter instance placing the stretch roll in front of the first roll where the fabric is made to enter.

In placing a series of binding rollers over spectively all the way from 4 or 6 drying cylinders up to 36 cylinders in the complete machine. A single column machine, as will be readily understood by consulting Fig. 3, would mean only one of the two columns shown in said diagram, in other words, the fabric as shown entering at A in the first column, would leave the then complete drying machine after passing around drying cylinder, 8, the other column (drying cylinders, 9 to 16), then not being provided in a single column machine.

With reference to Fig. 3 as given, the same refers to a two column machine, the fabric as entering the machine in the direction of arrow A in an upward direction through the column, passing respectively around drying cylinders, 1, 2, 3, 4, 5, 6, 7 and 8, then leaves the first column, passing overhead to the second column, and passing through the lat-

ter in a downward direction, i. e., around drying cylinders, 9, 10, 11, 12, 13, 14, 15 and 16, leaving the machine in the direction of arrow as shown at B. The run of the fabric as thus referred to is shown by means of dotted lines, and will readily explain the subject.

In the same manner as we have shown 8 drying cylinders for a column, more or less can be used.

Fig. 4 shows us another upright cylinder drying machine, calling in this instance for 23 drying cylinders to the machine. Arrow A shows the entering of the cloth into the first column, and arrow B its leaving the machine at the foot of the second column, and from where in turn it then is guided to whatever arrangement for taking care of the cloth required. Arrows in circles, as representing the drying cylinders, show their direction of rotation, and are identical in that respect to the arrangement of drying cylinders shown in the previously given illustration.

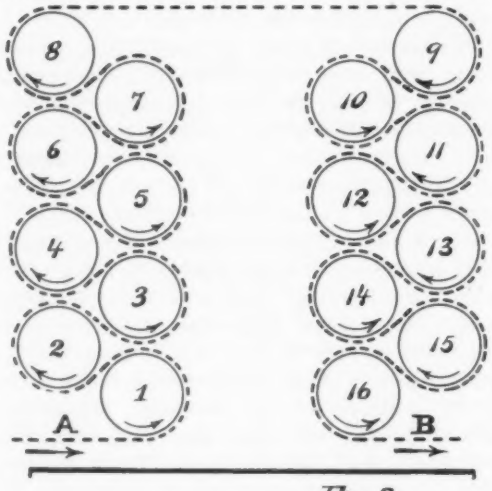


Fig. 3

The run of the fabric, i. e., dotted lines in Figs. 3 and 4, will at once indicate to us that in machines constructed by that principle the fabric is dried both by the contact of its face and back with the drying cylinders.

With reference to Fig. 3, in the first column, the face of the fabric, for example, comes in contact with all the uneven numerals of drying cylinders given, the back in this case coming in contact with all the even numerals of drying cylinders quoted; drying cylinders, 8 and 9, work on the same side of the fabric, and for which reason, the face of the fabric in the second column of drying cylinders, then comes in contact with all the even numerals of drying cylinders quoted, and the back of the cloth with all the uneven numerals of drying cylinders given.

With reference to diagram, Fig. 4, the affair is somewhat changed, i. e., all the unevened numbered drying cylinders in both columns act on one side of the fabric, the even numbered drying cylinders in both columns acting on the other side of the cloth. As will be readily understood, if so required, winces, i. e., binding rolls, can be introduced to these upright cylinder drying machines, in order that all drying cylinders, everyone throughout the machine, act on one side of the fabric only.

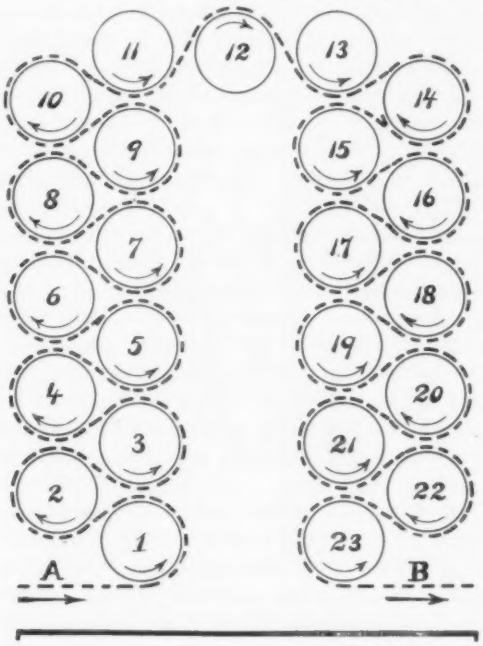


Fig. 4

Tenter drying, as will be readily understood, refers to a more costly machine. At the same time, the drying capacity of these machines is less, requiring at the same time more floor space and more labor to operate them. However in opposition to this, it has

the great advantage that besides drying the cloth at an even width, by means of stretching it at the same time, that it leaves the fabric with a soft, clothy feeling, not possibly to be obtained by means of cylinder drying. It will also produce a more perfect selvage to the fabric, since the same is kept stretched during the process of drying, and cannot wrinkle, as is the case in connection with cylinder drying.

These tentering machines, as a rule, are made in sections of 10 feet in length, and consequently the tenter required by a mill may be varied in total length, according to the demands of the mill. They are fitted with a shaft driven by power, by means of which they can be made narrower or wider to suit the width of the goods under operation. Automatic feeding attachments are also frequently provided to these tentering machines, and which greatly assist in getting the goods on to the tenter.

Fabrics dried in the tentering frame present a full feel, the threads are not flattened and drawn out of place as is the case in connection with cylinder drying machinery, the cloth having the natural appearance, as if it had just come from the loom.

With fabrics which are to be calendered so as to impart to them the proper appearance, a great deal depends upon the friction and pressure of the machines; however, the finisher has it in his power, by using appropriate finishing and filling agents, to produce any variety of effects.

Drying machines, whether cylinder or tentering machines, produce steam, and which must be expelled from where the sizing is carried on. Ventilation of dry rooms for getting rid of free steam, is indispensable in order to facilitate the cooling of the ordinary air, which, if not renewed, becomes unbearable to the operator, on account of being over-charged with moisture, and when the goods after leaving the hot cylinders and then cooling, in turn reabsorb a certain amount of humidity of such air, as is overcharged with steam vapors.

To remedy this inconvenience, formerly hoods were placed over the drying machines, said hoods having chimneys or trunks to convey the steam out of the building, whereas now ventilators are used in preference, for removing the steam and renewing the air at the same time, the Barney Ventilating Fan Co., of Boston, Mass., building an excellent compound fan for this work. The object of this fan is to increase the volume and velocity of columns of air and to deliver them freely through the fan in such a manner as to meet with minimum of atmospheric resistance at the discharge face of the fan. The fan is so constructed that while the rear blades suck in the air, the outer blades beat away the surrounding air and draw out that taken in on the other side of the fan. The unchangeable shape and angle of the blades (all scientifically determined) are such that the proportionate maximum of work is accomplished whatever the speed employed.

Sprinkling or spraying after cotton goods have been starched and dried, i. e., conditioning them for the calendering process, are as a rule followed by excellent results with many kinds of fabrics. A finisher frequently pays little attention to this process, although upon it the successful final finish of the fabric in many instances depends, for the fact that if goods are not sufficiently moistened before calendering, they will become hard, rough, paper like, taking the pressure of the calendering rollers imperfectly, fold badly, and as will be readily understood, come in a poor condition in the market. However, like any other process, the affair can be overdone, for the fact that if we would dampen cloth too much before subjecting it to calendering, it will become flabby, i. e., have no body, and in turn an unmarketable fabric the result. From this it will be seen that sprinkling, i. e., the moistening of the fabric is a most important process for the finisher; it must be done evenly, uniform, as well as thoroughly, that is, the water must be thrown against the fabric in a very fine spray, and at the same time with such a force that it will penetrate into the structure.

In the older kind of construction of these machines, and as still built by one or the other machine builder, a revolving brush is used to throw the spray of moisture on to the goods. This is considered an imperfect method of moistening, i. e., conditioning cotton goods, since the brush will wear more or

less unevenly, become waterlogged at times and then run in this condition, and in turn throw an uneven as well as unpenetrating spray on the goods with the result that the fabric will be dampened more in one place than in another, and when the finish then in turn will take unevenly.

A modern machine for spraying cotton goods is built by the Textile Finishing Machinery Co., of Providence, R. I. The same with reference to the dampening or spraying part, and where the secret of the success of this machine lies, consists of a copper box with proper nozzles or atomizers set in, and an air pressure blower for forcing the water through the nozzles and spraying it on to the goods. They also provide in this machine proper devices for regulating the amount of water in the box so that any degree of spraying, from the finest fog to almost a coarse rain drop can be obtained by the finisher with this modern make of dampening machine.

The pressure of air as used in connection with this machine is such, that it will throw the spray against the cloth with such a force that it will penetrate into every part of the structure, in turn resulting in an evenly dampened fabric, and thus laying the foundation for best results in calendering; and it is no wonder that this machine is fast superseding the old-fashioned brush dampening machine, which, is mentioned before, is always more or less unreliable with reference to a proper conditioning of the cloth for calendering.

Another excellent modern spraying or sprinkling machine is built by the Curtis & Marble Machine Co., of Worcester, Mass. In the same, the spraying cylinder is composed of a steel shaft on which are packed a series of discs made of brass, with spacing collars between, in order to give the proper distance between the discs. This cylinder rests partly in a reservoir containing water, said reservoir being provided with means of carrying away the surplus water, and at the same time insuring a uniform depth or supply of water in the reservoir.

At either side of the spraying cylinder a deflector is hinged, and a shield likewise hinged at its lower portion, both the deflector and the shield being adjustable in their position by means of segment handles acting through fingers and connecting links, permitting deflector and shield to be placed in any desired position, by means of hand wheels.

In the operation of the machine, the rapidly revolving brass discs of the spraying cylinder take up films of water from the upper surface of the reservoir, and throw this against the inner surface of the shield and deflector, whence they strike the goods in the form of a fine spray or mist, free from individual drops of water. The fineness and volume of the spray depends upon the position of the deflector and shield relative to the spraying cylinder. When for this reason the shield is placed over and quite close to the cylinder, the volume of spray thrown by the cylinder will be consequently reduced, and as the shield is moved in a direction away from the cylinder, the volume of spray will be proportionally increased.

The same affair refers to the deflector, and for which reason, the operator of the machine has at all times at his command means for governing the amount and fineness of the spray, to suit the different fabrics under operation.

Drip boards, located inclined at either side of the water tank, take any surplus spray or water back into the reservoir, whereas by means of an adjustable overflow pipe, the depth of the water in the reservoir is properly regulated.

The spraying cylinder runs in adjustable boxes held in a forked stem, which is adjusted up and down in a stand fastened to the frame of the machine. By turning a set screw at the bottom, either one or both ends of the spraying cylinder can be raised or lowered, in order to bring the surface of the discs parallel with that of the water so as to insure an even spray throughout the entire width of the cylinder.

A brass rack placed in the bottom of the reservoir prevents any agitation of the water, as might otherwise be caused on account of the constant revolution of the spraying cylinder, thus insuring a constant evenness in the amount of spray. Guards are provided at the ends of the reservoir for preventing the water from splashing over.

(To be continued.)

CONDITIONING WOOL FOR CARDING.

The most important factor for wool about to be carded is that it should be perfectly clean and dry; the latter on account of the greater resistance and strength of the dry staple, as compared to the wet. Although wool possesses greater elasticity in its dry condition than when wet, and since the same is a disadvantage to good carding and spinning, it would seem that the wet condition of the staple would be more advantageous. However, this apparent advantage does not furnish sufficient compensation worth while to consider, compared to the injuries resulting from the inferior strength of wet staple, a feature readily explained and tested by the fact that wool, yarn or cloth, in a wet state tears more readily than if dry, and for which reason, if picking and carding wool in a wet condition, in spite of its reduced elasticity, the fibres are more likely to be torn, a tendency which increases with the amount of energy put forth in the process.

The preference of handling wool in a dry condition at carding and spinning seems in opposition to the fact, that in the manufacture of wool-shoddy, in order to work up, i. e., tear the material into a longer staple, the operation is performed while it is in a wet state. However, in this case, we deal with a wool united firmly together by spinning and weaving, and still more in many cases by having been felted, and which material (woolen-rags) only becomes supple and elastic when moistened. In the manufacture of shoddy, the tendency of rags to tear more easily when in a wet condition is utilized, for the fact that the more easily they are torn, the longer will be the resultant staple.

A somewhat similar point will come under our consideration when gigging or napping woolen goods, as is well known, that in this operation the staple, or nap of the fabric is disengaged, or raised from the felt, much more readily when the latter is in a wet condition than if the cloth is dry.

The point might now be raised by the reader, why talk about dry wool when as a fact the wool previous to carding and spinning is oiled and when the lubricant used in preparing the wool for the carding, during its picking and mixing, contains a large percentage of water? In answer to this question we must remember that there is a vast difference between a material wet from the start and when the staple is completely saturated, the wool only being moistened to a small degree with an oily fluid, in order to render it supple and elastic for the purpose of carding and spinning properly. This will at the same time explain why after a lot of wool is picked and oiled, said lot will work more satisfactorily if used at once than if left lay for some time, so that the lubricant has time to penetrate. To prove the correctness, take a lot of oiled wool and work one-half at once, whereas the other half leave lie for several days before using and when you at once will discover a great difference between the two, the former working much more satisfactorily. This also will prove the reason why extra large lots card and spin better at the beginning of the lot than towards the end, it will explain that although it is a good plan to prepare as large a lot as possible for the mixing it will be well to divide such a large lot and pick and oil separate, i. e., don't pick and oil the second half until the first half of the lot is about used up on the first breaker card.

It certainly is an established fact, that wet wool fibre will be more easily straightened and smoothed, but at the same time, it will towards the end of the carding process, dry gradually, and then show an inclination to return to its original condition. According to the amount of drying taken place, it will then change its straightened position, and the preceding straightening and carding will consequently be labor lost. This gradual partial drying of the material, wet wool, provided the latter is used in such a state, will during the carding process lead to another and greater evil than the one previously referred to, viz: uneven counts in the spun yarn, for no matter how thoroughly the wool extracted after washing as following either scouring or dyeing, by means of a hydro extractor, water will remain in it and which by means of gravity will settle: for which reason the lower layers of wool, as held in any receptacle, will always be more saturated with water than the upper

ones, in fact the latter eventually may become dry. This change in condition of the wool will even make its influence felt in connection with oiled lots of wool, in which the wool originally was dried before picking and when the stock on the second or the finisher card will be much drier than such which has not yet been worked. More particularly will this point be noticed when delays to the machinery occur and when in cases, no matter how exactly the material was weighed, it is next to impossible to obtain equal roving and consequently even counts of yarn.

With reference to cleanness of the wool, the same refers either to a perfect scouring of greasy wool or a thorough washing of the dyed material, as the case may be. We will not go into detail with reference to the importance of scouring as well as a description of the process, for the fact that we printed some time ago a descriptive article on this subject and to which the reader is referred for details.

With reference to the amount as well as process of drying the wool, this is a most important item to any woolen manufacturer, for the fact that a drying at an excessive temperature, and this more particularly in connection with defective ventilation, must be avoided, since wool will be dried under such conditions at the expense of its staple, i. e., becomes rough and brittle. Its latent electricity is also developed, and is apt to make trouble, in consequence of which the fibres will not lie as smoothly as they should, having a tendency to fly off during picking, carding and spinning. These indications of electricity show themselves more particularly upon the finisher card, where they are apt to cause roving strands to unite and run together. At the same time, it is proper to mention here, that the tendency for electricity will be found more pronounced in some kinds of wool than in others, so that a special heavy lubricating becomes necessary in connection with such wools. Never pick and lubricate a lot of wool a longer time ahead than necessary for keeping all the machinery as much as possible on the tight pulley, since such lots as picked for a considerable time ahead will dry upon their surface and when the purpose of the lubricating as done in connection with the picking is defeated, while at the same time the lower portion of the lot is apt to become too wet. A mild drying, by machinery constructed to imitate as closely as possible the process of drying in open air, and in which a thorough ventilation is an important factor, is necessary, so as to lay the foundation for a wool prepared for good results afterwards during the carding and spinning processes.

As will be readily understood, a perfectly clean stock is a necessity to preserve the card clothing, as well as produce a smooth, even yarn, and this in connection with production to the mill, and for which reason any residues of dyestuffs adhering to the wool as coming from the dyehouse must be removed thoroughly, by a thorough rinsing of the dyed staple. To insure a thoroughly good result in this way, it is absolutely necessary to have wool always well scoured previous to its dyeing process, since badly scoured wool parts with the residues from the dye bath with far greater difficulty than such wool as has been scoured perfectly. In fact, perfect scouring is one of the backbones of success in a woolen mill and not enough care can be given to it.

With reference to a careful washing of the wool, after dyeing, this refers more particularly to wools dyed in connection with natural dyestuffs like madder, barwood, logwood, vat colors, etc., whereas the modern artificial dyestuffs, such as alizarines and others, generally become fixed so thoroughly to the wool that very little dye residue remains in the wool, to be in turn removed by washing. In connection with wool dyed with natural dyestuffs, such as logwood, barwood and similar dye woods, the residues of the dyestuffs used cannot be removed entirely by washing the dyed wool, such wool in turn requiring a dry dusting previous to it being in a condition for picking and oiling.

Although the dusting and cleaning of the dyed wool before the picking, oiling and carding is a most important item to any woolen manufacturer, still at the same time it is frequently very superficially performed in many mills, both to the injury of machin-

ery and staple. The principal disadvantages of an insufficient cleansing of the dyed staple before oiling, picking and carding are:

The dirt and dust left in the wool will absorb a part of the lubricant, and thereby diminish its effect upon the fibre, besides

The mixture of oil and dirt in turn will tend to clog the card clothing prematurely, and thereby interferes with the proper carding process.

Not only is the clothing gummed up and rendered partially useless, but at the same time, the wool itself is also matted and gummed together, in which condition the smoothing and straightening action of the card is more or less hindered, the staple adhering more or less to the working surfaces of the machine at all points.

The doffing of the film from the doffer cylinder of either breaker or finisher cards is also rendered more difficult, besides a less clean yarn and fabric will be the result, and this with a consequent increase in expense to the mill.

The work of dusting, i. e., freeing the dyed wool from its dyestuffs adhering to it is done on machinery known as dusters and of which several excellent makes are met with, for which reason a description of their construction and operation will be of the greatest of interest to the reader. They are constructed after, i. e., can be divided into, two groups of construction, viz: Straight-action dusters and cone dusters.

An example of the first kind is the shake willow or duster as built by the Curtis & Marble Machine Co. The same has in its interior, conveniently placed, four stationary bars containing double rows of strong steel pointed teeth. One of these four bars forms the upper partition of the opening for feeding the machine. The cylinder, which is 3 1/2 feet in diameter, is covered with ten lags, also containing double rows of teeth, which, as the cylinder revolves, work between the teeth in the stationary bars. Around the circumference of the cylinder extends a heavy wire screen. To receive the wool or other material to be cleaned, the front apron part of the machine is lowered, and after a sufficient amount of the stock to permit proper handling by the machine, has been deposited upon this, the curved screen with its outside apron is then drawn up and held in its place (the machine thus being closed), by balancing weights on either side of the machine. The machine is then set in motion, the cylinder revolving downwards in front. When the stock has been sufficiently opened and cleaned, a door at the back side of the machine is then opened by means of a lever, and the stock blown out of the machine. A powerful exhaust fan, situated on top of the machine, carries off the dust and fine dirt from the stock, by means of suitable pipe connections to wherever directed, leaving the heavy and coarser dirt to fall through the wire screen under the cylinder, from where in turn the same is from time to time removed by the operator. After one lot of stock has been cleaned and blown out at the rear, another lot is fed in without stopping the machine, and the process, as explained before, is repeated. The machine is built in various sizes, with capacities of from 2,000 to 8,000 lbs. stock cleaned per day.

With reference to the other style of dusters, the James Hunter Machine Co. build an excellent machine. The main object in the construction of this machine, has been to produce a duster which will thoroughly clean the stock without injury to it, and one which at the same time is very accessible for cleaning. The machine as designed will remove an excessive amount of dirt and foreign matter from the stock without rolling or piling it or injuring the fibre in any way. In its general plan of construction, the new machine follows closely the lines of the well known cone dusters, although differing from them in certain details. The main frame of the machine is a skeleton held together by means of girts, and provided with doors and covers, so that by opening these doors and raising the covers, the machine is accessible at every point for cleaning. The screen of the machine is made of perforated sheet steel, secured to a framing of the machine and can be slid into and out of the duster, as required, from the right hand end, two angle irons providing a track for sliding the screen into place and holding it when in. This makes a more satisfactory construction of a

screen than the ordinary type which is parted longitudinally through the centre and withdrawn from the machine on either side. The cylinder of the duster is fitted to an excessively large shaft, being formed of cast iron spiders, provided with hard wood rails into which pins are fitted, this in turn being covered with sheet steel, so that the surface of the cone or reel is smooth and true.

An exhaust blower of exceptionally large capacity is situated at the left hand side, outside of the machine, and which blower removes any dust and foreign matter which falls through the screen, the same being carried off by suction through the blower, and from there delivered by suitable pipe connections, to wherever required, the dust room or outside the building.

The feed end of the machine is in front, at its left hand side, the outlet being in rear at the right hand side of the machine, and which in turn is driven by means of a friction pulley in place of tight and loose pulleys as commonly used. The machine is of a strong, heavy construction, in order to stand up to the work indefinitely.

At the same time, in order to make the construction of prominent makes of dusters met with complete, we must mention that some of the best dusters met with in our prominent woolen mills are built by the C. G. Sargent's Sons Corporation, the same building both styles of dusters previously referred to, a concern which makes the building of such preparatory machinery for woolen mills a specialty, being one of the oldest concerns of building this class of textile machinery (established 1852) in our country.

Insufficient washing of wool before spinning renders a more frequent cleaning of the carding engine necessary, with a consequent loss of time and decrease of production, more waste, poorer yarn, and frequently trouble in finishing the goods, stronger alkalies may have to be used to get them clean during scouring the goods, a feature which in turn may result in harsher goods. Such items certainly furnish weighty arguments against the working of the wool during the carding process in a wet state, because a dusting of the wet staple is out of question. Let us imagine, for example, a staple which has been turned out from the washing operation insufficiently cleansed and has come from the dye house largely charged with the residues of the dye kettle, and when it will be readily seen that a workmanlike and thorough treatment of the staple in the subsequent stages of manufacture is almost impossible.

The dry wool, previously to picking, must be oiled only after it has been thoroughly cleansed and dusted, the purpose of oiling being to make the fibre supple and elastic, so that it can be handled more easily in the carding and spinning processes. The quality of the lubricant to use for this purpose is a most important factor, taking into consideration both its adaptability for spinning as well as for fulling and scouring purposes. With reference to the first item, i. e., to permit proper carding and spinning, the proper percentage of good oil is required for the lubricant, in order to make the fibre supple. For this reason it is well to mention that a number of compositions are found in the market containing very little pure oil, but in place of it various solutions of alkalies, decoctions of carragheen moss, etc., ill adapted for keeping the staple elastic, often producing the opposite result. In connection with the use of such a lubricant, yarn and goods will naturally partake of a corresponding character, and the small pecuniary advantage afforded by the purchase of these substitutes will be more than offset by the inconveniences and trouble in spinning of the yarn as well as the finishing of the goods.

The wool must be lubricated before spinning with a certain percentage of good oil, which should never become resinous and gummy, a feature which is more or less an objection to vegetable oils, and is caused by the action of oxygen. The vegetable oils, olive oil, rapeseed oil, etc., formerly used almost exclusively, all possessed this disadvantage, especially the last named. Nevertheless, yarn spun with good olive oil, which, however, is a very expensive article to use, can be stored for a long time without becoming sticky and stiff. Although the animal fat, oleine is not open to this objection; it is always more or less acid (for the sake of cheapness, with the acid only imperfectly removed) and consequently attacks the card clothing.

(To be continued.)

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

ORDER AND MANUFACTURING BOOKS FOR A WOOLEN MILL.

BY CHARLES HERITAGE.

That the superintendent of a woolen mill may know each day or week what progress has been made in each department, a complete record of mill work should be kept from the time the raw stock enters the mill until it leaves it in the form of finished goods.

Fig. 1 shows a page from the book kept by the overseer of the wool sorting department. On receiving the wool it should be carefully weighed and the date, lot number and weight, with any other necessary data, be entered. When the wool is delivered to the sorter each bag should be checked off the list.

WOOL SORTERS ACCOUNT

Date	Name	Number	Lbs.	Grade				Loss	Remarks
				2-3	4	5-6	Coarse		
Sept. 11	William Johnson	1460	229						Thumbage Lot
"	" "	1461	240						Pure Med. Texas
"	" "	1462	235	35 2.	24 7	70		35	
"	" "	1464	250						
"	" "	1463	245	24 7½	17 3½	50		24	
			1199	59 9½	42 0½	120		59	

FIG. 1.

WOOL RECEIVED

Date	Number	Net Wt	Remarks	Date	Number	Net Wt	Remarks
			5 Sample Bags Texas from Brown & Adams				
Sept 10	1460	229	1 lb short Sorted Sept 11				
	1461	240	" "				
	1462	235	" - 12				
	1463	245	" "				
	1464	250	" - 11				
		1199					

FIG. 2.

Fig. 2 is the method of keeping the wool sorter's account book. After the wool is sorted a careful record should be made of the different grades. Fig. 3 is the same report made up for the week, and shows the weight

of the different grades sent to the dyehouse. This report should also show the amount of unsorted and sorted wool on hand.

The overseer of the dyehouse keeps a record of the name and amount of wool in the grease weight used for each lot, also the net

WOOL REPORT

Week Ending Sept 8, 1906

Wool Received			Wool Taken to Dye House		
No. of Bags	Weight	Remarks	Gross Weight	Grade	Remarks
175	33,750	Fine Medium Terr Grease	4500	2&3	Fine Territory Grease
50	10,000	x Fine Pulled "	1674	4	" Medium Terr
100	11,000	Fine x Fleece Scoured	1200	5&6	Med. Territory
40	4,400	B Super Pulled "	1500	B	Super Pulled Scoured
Wool on Hand not Sorted			**Wool on Hand Sorted**		
157	29250	Fine Medium Terr Grease	2000	2&3	Fine Territory Grease
50	10,000	x Fine Pulled "	1000	4	" Medium Terr "
			600	5&6	Medium Territory "
100	11000	Fine x Fleece Scoured			
25	2900	B Super Pulled "			

FIG. 3.

COLORING ORDER

Date	Color	Weight Grease	Weight Net	Grade	Name
Sept 15 1906	1/2 Blue	885	300	2&3	Fine Terr
	1/2 Green	567	250	4	Med Terr
	2 Black	675	350	5&6	Med Terr
	1 Blue		350	B	Super. Scoured

FIG. 4.

WOOL COLORED, USED AND ON HAND

Date	Color	Grade	Colored	Used	On Hand
Sept 11 1906	*12 Blue	2&3	600		
" 12				425	
" 15					175
" 17	"	"	300		
" 22					475

FIG. 5.

weight and the grade. This is kept in a book like Fig. 4. The amount of the wool, the grade, and the color to be dyed should be recorded daily, Fig. 5, also the amount of the dyed wool used. Then by subtraction the amount of dyed wool on hand at the end of

DYE HOUSE REPORT

Color and Number	Grade	Colored	Used	On Hand
*12 Blue	2&3	600	425	175
*2 Full Black	2&3	900	700	200

FIG. 6.

the week can be easily determined. The weekly report of the dyehouse is made out as shown at Fig. 6.

(To be continued.)

There are 4,416 institutes in Austria giving training in special subjects.

ENGLISH NOTES.

(By our Special Correspondent.)

The one or two British carpet firms which established works in the States to escape loss of trade have had no evident cause to rue their action. It may be believed that the Crossleys of Halifax regret their omission to take the same departure as the Firths. A large American trade was theirs formerly, but the closing of foreign markets has limited means of expansion and has resulted in large repayments of superfluous capital to shareholders. Influenced partly by the prospect of obtaining labor more cheaply, British carpet firms have turned rather to Canada than the States. The intention of the Coats firm of Perth to put down works in Ontario has already been largely advertised. John Crossley & Sons, Ltd., in concert with the tapestry and printed carpet firm of A. F. Stoddart & Co. of Scotland, have been prosecuting inquiries in the Dominion also. The former were the originators of the improved carpet loom. They employ 5,000 persons at their Dean Clough mills and are at the head of the English trade.

* * *

The making of special carpets with monogram patterns or of ultra-large dimensions is a business on which some English mills bestow attention. A hand-made Axminster from a Wilton factory, made for a club, may not be the world's largest, but its dimensions of 62 feet by 35 feet all in one piece are notable. A loom 40 feet long had to be constructed specially for the work and 13 workers took four months to complete the manufacture.

* * *

Carpet makers in America have a special interest in the Khorassan wool about which a British Consul has been reporting. The output is said to be increasing, as is competition to buy this material. A few Armenians control the business by force of advances made to flockmasters months in advance of shearing. In a country devoid of means to enforce contracts and to prevent fraud this is not an operation for strangers to undertake lightly. Coarse Afghan wool is mixed with Persian and sold as Khorassan, but not until an attempt to undo Afghan dishonesty has been made. It is the way of these barbarians to wet the wool, load the inside with dust and dirt and then twist up the fleece very tightly. The dealers in Meshed and Karez can shake out the loose dirt, but they cannot repair the damage to condition and quality. Defective transport makes the wool dear, and healthier trade would result if the Persian Government, like the Russian, made it obligatory to sell all wool in open market.

* * *

Where others fail, Americans can perhaps succeed. If one will produce the ideal sheep-marking composition, he will find plenty of wool merchants in England to recommend its use strenuously to farmers. To please dealers and manufacturers the composition must be soluble in hot water. To satisfy farmers it must be insoluble in cold, fast against light, and tenacious enough to stand all pastoral vicissitudes. It is required to replace the tar which ruins so much wool and like tar it should be applied easily with a branding iron. Its ingredients should comprise nothing that is chemically harmful to wool and after hot washing should leave no stain behind. There is the specification. Where is the public benefactor who can comply with it?

* * *

Ramie filling for Italian linings has been abandoned once on account of the irregularities of the yarn which, in this weave, appear conspicuously on the surface. A further attempt to coax the market is being made. A capacity in which ramie appears to signal advantage is in tape for mechanical services. Woven in herringbone twill the defects of the yarn are not noticeable, nor do they matter. The great strength of the tape and its immunity from contraction under moisture are set against its greater cost than cotton. One field of employment for such tape is found in newspaper printing offices.

* * *

Governments are beginning to take more interest in the accuracy of textile trade descriptions. Australia is preparing to make trouble about made-up goods marked "wool" which are not all wool, about the name

"Sylko" applied to mercerized thread, and about false lengths on sewing twists. A true description is to accompany the misleading one. At Calcutta the Customs are preparing to proceed against firms attaching the term "fast color" to goods of which the color is not really fast.

Unwittingly, no doubt, the Calcutta collector has opened up one of the most debatable of all textile questions. What is a fast color and who shall prescribe the standard of fastness? Fastness to light is one thing in a temperate climate and another in the fierce and ceaseless sunlight of the plains of India. Fastness to friction is less affected by change of locality and fastness to weak alkali and to boiling is the same everywhere. But how are the myriads of cloths to be made conformable to any one standard or to the vague and indefinable public conception of what "fast color" means?

Dyers and manufacturers in England have no uniform idea of fastness. A piece-dyed fast blue in the dress-goods trade is one that stands boiling in a solution of washing soda (1 oz. soda to 20 ozs. water). A fast black on cotton is one that does not crock. A fast dye on embroidery thread is commonly one that does not bleed in boiling water. Fast browns or blues for men's goods are dyes that do not fade very quickly. There may be other tests and other values applied, but these are the most frequent meanings, unless fastness to milling comes into question. In its acceptance by the trade the term "fast" is relative and if unversed authorities are to try to put hard and fast interpretations on loose and convertible terms an exciting time is prospective.

The protectors of the public had better see first that their pains are worth while. If misconception is to be avoided, it is possible that public interest will be better served by the invention of new names to whose right use dealers must keep. Abuses of terminology are plentiful. What with "shrunk" goods that shrink, "rainproofs" that admit water, "unspottable" fabrics that spot on the least provocation, and "indigos" that know not indigotin, a glaring picture of degradation might be drawn. But these misnomers bring their own revenges and it is always a question whether legislation will be useful, useless, or merely instrumental in intensifying the apparent evils.

* * *

Firms carrying on dyeing and scouring operations are being harassed much by the authority whose business is to keep industrial Yorkshire's rivers reasonably pure. Grease-recovery is done at a profit by various manufacturers and the saving of this by-product is to be encouraged. Cases of individual hardship abound as not every woolen mill has ground to spare for settling tanks. In stringency of regulations England appears to be outdoing the Continent, where also the grease from wool-working constitutes a public nuisance. American offenders may best anticipate their turn for reprobation and punishment by leaving space for dealing with waste waters.

* * *

One of the learned societies put forward the proposition that all light clothing for the hot countries should be backed with red. The notion is to absorb all the actinic rays of sunlight, which are those that blister and irritate the skin. A trade is being done in white and khaki drills and twills whose backs are printed solid red. At sight they would be taken for double fabrics. The practical drawback is that printed reds have an inveterate tendency to rub off and this defect manufacturers are seeking to overcome. The red favored is between crimson and scarlet and its function is precisely that of the red screen a photographer stretches before the window of his developing chamber.

* * *

An advertisement in London papers for "Star Salesmen" to sell American cotton machinery in all European countries is perhaps indicative of a firm intention to export. A house that is able to give quick deliveries will take its English competitors at a temporary disadvantage of some importance. It is everybody's complaint that machinery is unobtainable and mill fires could hardly come at a more awkward time than now. The furnishing of English mills is almost exclusively in English hands. Three years ago textile machinery exceeding a million dollars in

value was imported, but the sum fell to $700,000 in 1905. Against the British export of some $30,000,000 the import is indeed insignificant.

In looms more liberty of choice is taken, but looking down a monthly share list of Oldham spinning mills one sees noted for the benefit of the investor the name of the firm which supplied the machinery. Seventy mills out of 116 are using Platt's machines and 48 of these have no other. Apart from the prestige possessed by the chief Lancashire machinists, their proprietary interests in certain concerns have considerable weight.

* * *

The foreman-presser has very much to do with the success of the dye-house and the position held by the stuff-presser in England is in certain respects remarkable. We have "soft pressers" who work upon dress serges and similar wool goods and "hard pressers" whose business is with linings and highly glazed fabrics. A strong union embraces the trade and the foreman is a comfortably remunerated man. The work is undertaken by the gang at a price of a shilling or so per piece and the earnings are divided. The foreman draws a wage from the office, he takes a share equal to that earned by each of his men and is paid further an equal sum per head by each of the pressers under his charge. He receives, thus, three wages and he possibly has from his firm a guarantee that the total shall not fall below a certain minimum.

* * *

Few of the old Piece Halls or Cloth Halls in which the forefathers of the textile trade did business now remain. To these the manufacturer came once or twice a week, carrying his own pieces if he were poor, or otherwise leading his pack-horse. The merchants assembled on what was once the lawn of the Piece Hall of Halifax (Yorkshire). The manufacturers had 315 dingy little rooms with porticos, ranged in a quadrangle. The Hall is now wrested from its original uses and can no longer be called the centre of the worsted industry. Built in 1779, it served its purpose for towards a century and its 10,000 square yards of space can still be peopled in imagination with bewigged merchants and rude master-weavers.

* * *

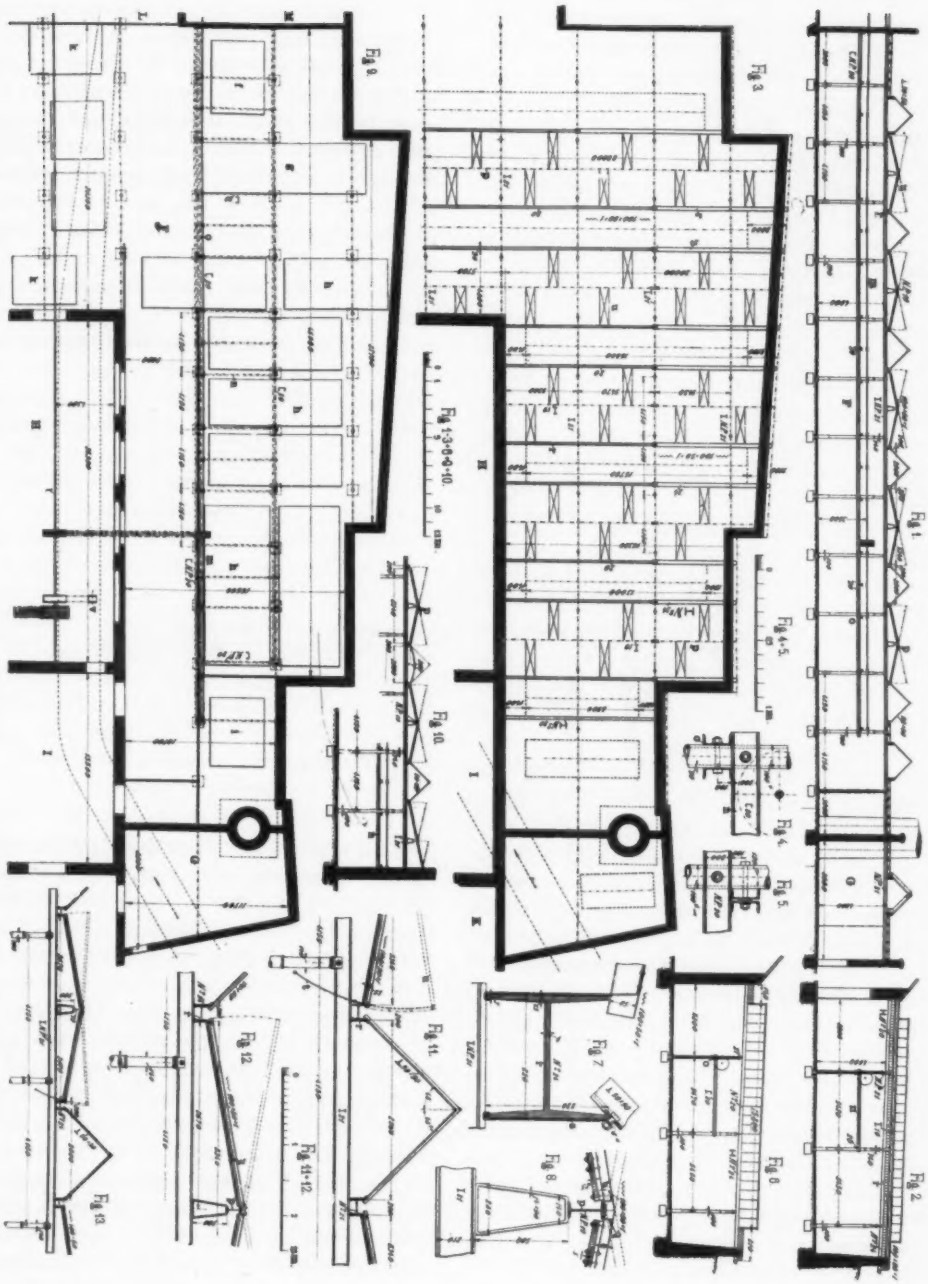
"The finest in the world" is the description freely applied to the new Exchange of the Liverpool Cotton Association. Its cost has been $1,500,000, of which one-third went to buy the site. The building has eleven electric elevators, its own telephone exchange and club, smoking and reading rooms. Seventy-four granite columns ornament the floor and uphold a series of corridors balustraded in marble. Better than the "Flags" on which raw cotton is now dealt in, the new Exchange is roofed and double-roofed in glass. Its design is Corinthian and Americans have had a hand in completing the edifice in only sixteen months. The opening adds a new sight to Liverpool in which Southerners should take a peculiar interest.

PLAN FOR A GERMAN FELT MILL.

The accompanying illustrations show the plan of a felt mill built in Alf on the Mosel in Germany. The ground plan of this mill, which has been modified to conform to the natural conditions of its location, is not particularly well adapted for the accommodation of the machines. The construction of the roof, however, embodies new features which will be studied with interest by manufacturers.

The room, M, is used for the storage of wool; L is the picking room; the room, H, is used for the fulling processes. The boilers are at I, the room, G, being used for a repair shop. The irregular form of the mill makes it somewhat difficult to arrange the machinery and also creates difficulties in arranging the posts to support the roof. There are five rows of posts arranged at practically uniform distances apart, and each row contains a different number of posts. Crossways the posts are 17 feet, 9 inches apart; lengthways, 13 feet, 6 inches. The posts are of cast iron, 5 1/2 inches in diameter.

In the main room are two web rolls, f, three web frames, k, one tenter machine, g, seven felting machines, h, and one singeing oven, i. These machines are driven from



PLAN FOR A FELT MILL.

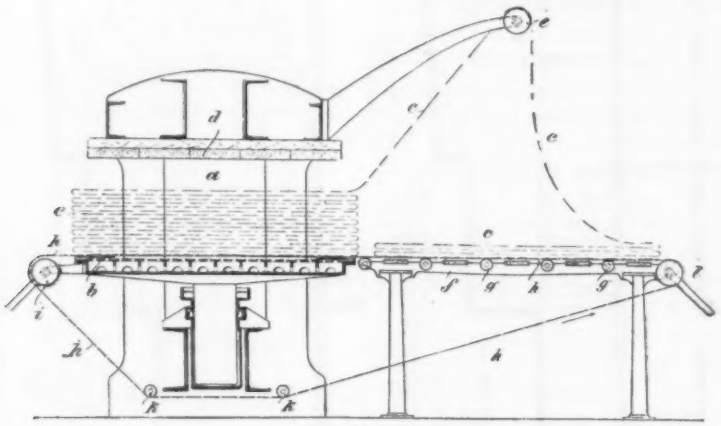
a shaft, l, by the use of a counter shaft, m. The shaft, l, is driven by belts from the engine in the room, h. Some years ago when the mill was built the roof consisted of wooden planks resting on cement and above the wood were two thicknesses of roofing paper. The slant of the roof was about 3 per cent. It was found, however, that the cement soon became saturated with water, and as a result crumbled away. The wood also decayed rapidly necessitating frequent repairs. This difficulty with the roof was caused in great measure by the steam from the work rooms. To remedy the difficulty the roof shown in Figs. 1, 2, 3, 4, 5, 7, 8, and 11 to 13 was substituted. The work room is ventilated by means of the ventilators, p, which swing on hinges and can be adjusted to any desired position, Fig. 11. By opening these windows the steam is allowed to escape. The condensed water is carried off by conductors, r. It was found that by using a pitch of 1 to 7 the water was carried off instead of dripping into the work room.

In remodeling the roof it was also found advisable to change the method of supporting the shafting, the new construction being shown in Figs. 1 to 9, where the bearings are supported on the iron beams, n. The result is less friction and a considerable saving of power. The beams supporting the shafting are also used for the support of the steam and water pipes.—Uhland's Technische Rundschau.

CLOTH SPONGING PRESS.

A German machine for sponging cloth is shown in the illustration herewith. The folded goods are placed in the press shown at the left and pressure applied. The lower plate of this press is hollow and the upper part perforated to allow the steam to pass through the goods. The upper plate is also perforated to allow the exit of steam. An endless apron, h, passes under the guide rolls, kk, and over the driving rolls, i l, also over the lower press plate, b, and the folding table at the right.

After the cloth has been steamed in the press the pressure is removed and the pieces carried over the guide roll, e, and folded on the table, c. In this way the position of the face and back of the cloth is reversed in the folds. After folding on the table the cloth is carried by an endless apron into the press again without being handled in any way by the operative. The pressure is then applied and the goods are sponged for a second time. During this process another piece may be folded on the table and then carried into the press by the apron as soon as the first piece is removed. The chief advantage claimed for this method is that the goods are sponged without being handled by the operative.—Oesterreichs Wollen und Leinen Industrie.



A CLOTH SPONGING PRESS.

The knitting industry of the United States employs nearly 600,000 spindles and over 88,000 knitting machines.

THE PROCESSES OF SILK FINISHING.

BY JAMES CHITTICK.

(Continued from December.)

The before-mentioned processes cover the field very fairly for the finishing of the usual run of silk goods, but there are certain special fabrics that require different or additional treatment.

Umbrella silks—having to shed the water—must be free from the small holes commonly known as pin holes, and should have a very smooth, close surface. To find and correct these pin holes can hardly be called part of the finishing process, but may be mentioned here. The operator sits in a small compartment shut off from any side or back light, and the goods pass downward from a roller between her and the light of a window so that any hole is at once visible, and when one is observed the warp and filling threads near it are rubbed with a small tool so as to work them over the pin hole, which is thus closed up.

Umbrella silks should be well polished, which adds much to their appearance, value, and suitability for the uses they are put to. A good polishing machine is expensive and takes considerable space both in length and width. The goods pass through slowly, if they are to be well done, so the output of the machine is not large, and if a considerable quantity of umbrella silk has to be taken care of, a number of machines may be required. The polishing is effected by means of knife blades, each a few inches long and with a curved edge, which pass at suitable speed over the silk as it goes through the machine and scrape or polish it strongly. One set of the knives is arranged to polish it lengthwise and another set to polish it crosswise. This smart rubbing has the effect of blending the threads better together, smoothing irregularities and closing up the fabric. It improves the goods markedly. Many other fabrics may be polished to advantage. Satins are usually polished on the back. Simpler polishing machines can of course be arranged, but they will not have the same efficiency. A horizontal knife blade set on edge and caused to move very rapidly back and forth while the goods pass over and against it gives a fair polish, and a machine of this sort can be cheaply and easily made.

Cotton back satins require a special treatment for filling up the backs and making them firm and smooth. A dressing, or size, for this purpose is made of such ingredients as soap, oil, beeswax, gums, glycerine, etc., each finisher having his own preparation. The goods, face downward, are passed over a table and under a vertical board or scraper, five or six inches high, set on edge at the end of the table with little wing walls, a foot or two long, slanting back from its ends to prevent the size from flowing over. The size is boiled to the consistency of thick glue, and from a kettle of this, placed near at hand, the operator pours large ladlefuls upon the slowly moving cloth on the table beneath, letting it spread back for a distance of a few inches from the board, and as it is carried away by the cloth he ladles on more. The speed at which the cloth moves depends on its construction—whether close or open, etc.—and upon the character of the sizing and the capacity of the dryer. Enough should be absorbed by the goods in passing to fill the cotton but not soak through the silk. After receiving the sizing the cloth passes immediately into and through the dryer, where by hot cylinders and steam coils the size is dried and the goods can then be pressed or otherwise treated.

Some fabrics on account of their hairy character required to be singed. This hairiness may be due to various causes such as the inferior character of the silk used, or to its nature, as in the case of Canton silks, or owing to certain spun silks being used, particularly if in singles.

Goods for piece dye, or for printing, such as foulards, are frequently well singed face and back in the grey, and often have to be singed a second time. Skein dyed goods are singed on one or both sides as required, and the singing process usually precedes the others.

Modern singeing machines are generally arranged with two long burners, sufficiently long to singe goods up to any commercial width, forty-five inches for instance. Gas, with an air blast, is used for the flame, and

the burners can either be made of long pipes perforated with small burner holes very near each other, or by preference can be made by a long narrow slit at the top of a flat, hollow, triangular shaped box or plate, the air and gas being admitted at the lower point of the triangle near the floor. The height of the flame, and the length of it (so as not to waste gas), can be regulated, and arrangements are provided for promptly raising the cloth out of reach of harm by the flames in case of accident or stoppage. Scraping knives and brushes are also provided for the goods to pass over before reaching the flames so as to cause the hairy ends to stand up as much as possible. The two burners are placed a little distance apart and so the goods get singed twice on the way through. A cotton lap attached to them starts through first and when moving is lowered into the flame, the goods following, and so they go smoothly and quickly through till the end.

This process requires good judgment on the part of the operator, as too close a singeing is apt to make the small burned ends of the fibres show quite noticeably—a defect not easily got rid of. The colors, too, are very apt to suffer in singeing, and in fact the process must be regarded as a necessary evil and to be avoided if possible.

Another machine which properly belongs to the finishing room is the tentering machine. This is used for the drying and holding out to a fixed width of goods that have been piece dyed, and which are still in a damp state. It is principally employed for thin and stretchy fabrics, such as crepes, chiffons, grenadines, etc., but other firm and heavier goods that are commonly dried on heated cylinders, or between steam coils, can be finished on the tentering frame to the decided improvement of their appearance. In its simpler form the tentering machine is a long frame on legs, with pins or clamps at the sides, in which the selvages of the pieces are hooked, and the sides where the goods are clamped can then be moved further apart so as to stretch the goods out to the required width. An iron car or box on wheels containing burning charcoal is then run backward and forward by hand on a track, lengthways of the frame, beneath the damp cloth till it is dry. The cloth is then released from its clamps, the dry part rolled up and the process continues till the piece is finished. With careful and intelligent attention very good work can be done in this way and a very fair output obtained also.

Where a large product has to be handled the machines are made much longer and heavier, are driven by special steam engines, and use gas or steam or both. They are fitted with automatic spring clamps, and are made very long—perhaps sixty to ninety feet, so that the goods, even when passing at a fair speed, are completely dried before they reach the other end. Being largely automatic, such machines do not require much help. They are quite expensive, however—say $3,000 to $5,000—and when the space occupied, gas, steam and power used, and the interest and depreciation on the cost is figured, it is evident that it would require quite a large amount of goods to be finished in that way to warrant the purchase of one.

The moireing or watering of silk is an important branch of the business. This in its simplicity consists of the pressing of two pieces of cloth together under great pressure and heat, and the moire effect is caused by the more or less irregular displacement of the filling threads. This can be seen by looking through a magnifying glass at a moire fabric, and where the lines of light are broken it will be seen that the filling picks have moved a little to one side or the other. The crushing effect of the process makes the goods feel very thin, glossy and papery, and generally fabrics intended for this treatment are made with good body. So also, as the play of light is caused by the displacement of the rib, it follows that fabrics with firm, well defined ribs, such as gros grain, will show the sharpest effects. Satins respond hardly at all to moireing, but on good taffetas excellent effects can be obtained.

To get proper results the ribs of the cloth, which are to be pressed against each other, should be as nearly parallel as possible, and to accomplish this the piece of silk is folded double, lengthwise, with face inward, and then the edges are stitched together at short intervals to keep them in position. It is customary, in order to get the ribs true and par-

allel, to do this in a dark room or compartment where the silk passes between the operator and a bright light, and in this way it can be done quickly and accurately.

Another way is to stitch the two ends of a piece together at full width and then stitch them at intervals down both sides, but this is not so generally done as there are certain difficulties attendant on it. Some rich goods, intended for special moire treatment, are woven double—an upper cloth above a lower one and face to face—and the weave is arranged so that at short intervals a fine pick catches an occasional warp thread, holding the two cloths together, and thus the exact paralleling of the ribs is obtained.

The piece, in its double condition, now passes through the machinery, which accounts for the fold seen in the middle of most pieces of moire, and the pressure and heat are given either by a calender or hydraulic press—the latter being the best, and the result is the well known watered appearance. A weak effect of this kind frequently occurs in pieces of woven goods lying in stock, particularly if the pieces have been at the bottom of the pile for some time, and in good quality gros grains for necktie uses, or other purposes, it is quite customary to put tissue paper between the folds to prevent it.

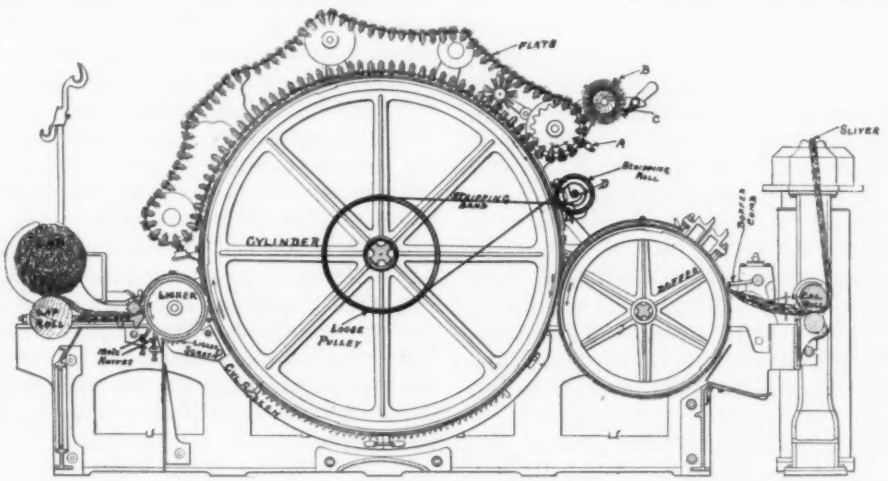
(To be continued.)

In 1905 New South Wales had 40,000,000 sheep, an increase of 4,500,000 over 1904.

STRIPPING COTTON CARDS.

BY J. T. B.

During the operation of carding, the teeth of the clothing become partly loaded with short fibres, leaf, sand, seed, etc., and these must be removed at intervals depending upon the stock used and the quality of carding required. On the modern revolving flat card the flats are stripped automatically as each leaves the cylinder, by means of what is usually termed the flat stripping motion. The accompanying illustration shows a revolving flat card built by the Saco & Pettee Machine Shops. The stripping motion of an oscillating comb, A, consists of a revolving brush, B, and a stationary comb known as the hackle comb shown at C. The oscillating comb is usually known as the flat stripping comb, and is set close enough to the flats to permit it to comb away the short fibres from them as they complete their journey over the cylinder. The flats then come into the path of the revolving brush, which assists in removing such impurities as may have escaped the stripping comb, and the revolving brush in turn is set so that its bristles pass through the teeth of the hackle comb and is relieved of the short fibres, etc., which it has removed from the flats.



A REVOLVING FLAT CARD.

In some cases the strips taken off by the oscillating comb are permitted to fall on to the doffer cover and accumulate until their

bulk causes them to fall over on to the doffer, thus producing bad places in the sliver and also in the card clothing. To prevent this a small wood roll is now applied, which is covered with cloth or flannel and set so that it rests against the flats just below the comb, A, and collects the strips immediately they are combed from the flats. The cylinder and doffer are stripped periodically. The method of doing this is by means of a wood roll covered with card clothing, and having a diameter of about 7 inches over all, including the wire teeth which project about three-quarters of an inch above the foundation. This roll is known as the stripping roll and when in working position extends across the front of the card, and rests in adjustable brackets, D, which permit it to be set in such a manner that the teeth of the brush enter the clothing of the cylinder or doffer about one-eighth of an inch below the surface of the wire. The door or cover, D′, is removed when stripping is taking place.

After the brush has been adjusted, it is driven at a high speed from the loose pulley on the cylinder shaft, by means of a crossed band and revolves in the opposite direction to the cylinder, which causes the teeth of the brush to enter at the back of the teeth of the cylinder clothing. Having started the brush it is now necessary to revolve the cylinder very slowly for one or two revolutions, which is done by moving the belt so that it turns the cylinder, but taking care that always enough of the belt is on the loose pulley to drive the brush. The doffer is stripped in practically the same manner.

The removal of the fibres is the result of having the surface speed of the stripping brush considerably in excess of the surface speed of the cylinder, together with the fact that the teeth of the brush are set into those of the cylinder, and its direction of motion causes the teeth of the brush to engage with the teeth of the cylinder from the back. The waste (strips) is then removed from the stripping roll either by hand, or by means of an arrangement consisting of a box mounted on wheels and having a board near the top covered with coarse card clothing. The stripping roll is placed in bearings and the teeth come in contact with the covered board above described; then by turning the brush backward and forward rapidly, and at the same time revolving it gradually, the strips are taken from it, and deposited in the box. Another way of removing them is to use a hand card, holding the roll with one hand and using the hand card with the other, or by resting the stripping roll on the brackets in front of the doffer and turning it slowly while using the hand card.

Card setting refers to the adjustment of the various parts of a card in relation to each other. The operation is usually performed by means of steel gauges from 8 to 10 inches long, and about 1 3/4 inches wide. The flat gauge is usually smaller and sometimes bent so that it can be used for sliding between the flats and the cylinder. The thickness of the various gauges may range from 5/1000 to 15/1000 of an inch. In giving a list of the settings used on a revolving flat card, the gauge number represents thousandths of an inch except when otherwise stated.

By reference to the illustration an idea of the parts requiring adjustment, and their relative positions may be obtained. Assuming the card is to be reset, we will begin at the back and go through the settings in approximately the order to be followed in actual practice.

In the first place the cylinder is the centre from which practically all settings must be made; it must be true in its bearings and have an even cylindrical surface.

The licker-in, or leader can now be placed in position and set with a 7 gauge to the cylinder, after which its bearings are bolted to the card frame; before finally securing the caps on the licker bearings we must adjust the licker and cylinder screens to the licker and cylinder.

The distance between the cylinder screen and cylinder at the back or feed end of the card may be set to a 15 or 17 gauge; at the centre the distance is increased to about a 29 or 34 gauge, while at the front end next to the doffer the distance may be increased to 3/16 of an inch.

The setting of the licker screen to the licker may be done either by gauges in the same manner as the rest of the machine, or

by using discs which are mounted upon a shaft resting in the licker bearings. When the latter method is used, the screen is set up to the surface of the disc and secured in position; this being all that is necessary as the shape of the disc is made to give the correct relation between the screen and the surface of the licker.

When gauges are used the back edge of the screen may be set from 1/8 to 5/16 of an inch from the licker; this distance is gradually decreased until at the point nearest the cylinder the screen may be set by a 12 to 15 gauge from the licker.

When the screens have been set they are secured in position, and usually arranged so that the licker screen and back end of the cylinder screen are movable with the licker bearing. After the relation of the screens at the back has been obtained they are capable of moving with the licker whenever the setting is changed or readjusted between the licker and cylinder.

After seeing that all the adjusting nuts and screws on the screens are secure, the back plate is placed in position. This plate covers the cylinder surface between the point where licker and cylinder leave each other and the point where the flats come into operation with the cylinder. In some cases this plate is moved with the licker bearings and is adjustable with the licker; where this is not the case, however, a 29 gauge may be used between plate and cylinder.

The mote knives and licker are next placed in position and the knives set with a 10 gauge from licker. In some cases the upper knife is set with a 10 or 12 gauge, and the lower knife with a 7, 9 or 10 gauge. The parts are cleaned thoroughly and caps put on licker bearings with everything clear and secure.

The feed plate may now be placed in position and set with a 10 gauge from licker. On modern cards the feed roll is supported by this plate and needs no further adjustment than simply placing the roll bearings into the chambers provided for them on the feed plate.

The flats are now set to the cylinder, using a 7, 9, 10, or in some cases where heavy carding is being done on a low grade of work, a 12 gauge. It is customary with many carders to set the flats nearest to the front of the card with a smaller gauge than the flats nearer the back, or where they come into operation. For instance a 7 or 9 gauge may be used on the front half of the cylinder and a 10 or 12 gauge on the rear half; or a 7 at the front, 9 at the centre, and a 10 at the back.

The doffer is set to cylinder with either a 5, 6 or 7 gauge. The doffer comb is set to the doffer usually with a 10 gauge, so that the sweep will be equally divided above and below a line drawn through the centre of the doffer and the centre of the doffer comb shaft. This serves merely as a guide or basis to work from as the sweep must be regulated afterwards to accommodate the web as it leaves the doffer. If the web has a tendency to sag down after leaving the doffer comb, the latter may be raised a little so that the sweep will not finish so low down. Again if the web has a tendency to follow the doffer and atmospheric conditions are favorable, the comb may be lowered slightly so that the sweep will be more effective.

The front plate, usually called the percentage or stripping plate, may have the lower edge about 29 from the cylinder, while upper edge may be from 29 to 58. The closer this plate is set to the cylinder the smaller will be the amount of flat strips obtained, and vice versa to a limited extent. This plate covers the surface of the cylinder between the flats and the doffer.

The flat stripping comb can in most cases be set to a 10 gauge from heel of flats and give good results, but it is advisable to use judgment by observing the action of the flats. The flat cleaning brush may be set so that the bristles barely reach the foundation of the clothing on the flats.

The hackle comb, C, is usually set about half way down the bristles of the cleaning brush, B.

For the last fiscal year the foreign trade of the United States amounted to only $35 a head; that of Canada amounted to $92 a head.

VISCOSE WORK.

BY JAMES STRAND.

A correspondent who asks for information about the so-called viscose work done on cotton fabrics touches on one of the most interesting developments of the textile industry. The cloths are coated, to all appearance, with a composition and so firmly that although they may be boiled their original appearance will be resumed when they are dry again. The samples sent are such as a bookbinder or an imitation-leather goods maker might use, but these do not cover the whole variety of cloths prepared in accordance with the same principle, if not by the same method. The exact methods of working are secret and there can be no pretence of revealing them. What is known definitely of them is that they all depend on changes in the cellulose of which cotton, linen, ramie and so forth are composed almost solely. Nature arranges the cellulose in different patterns in different plants, but the pulp is fundamentally the same.

The seeming composition is not a foreign matter at all. Either it is a portion of the cellulose of the fabric, which has been turned plastic and then hardened once more, or it is cellulose from another source laid upon a surface of cellulose prepared for its reception. Both means are employed upon occasion and both are made available by the fact that cellulose is soluble. In its primitive form, what might be called the enameling of carriage-sheets and tent-covers, is the leading example of this conversion of cellulose into a protective layer. By the Willesden patent process the exterior of the fabric is dissolved in hydroxide of copper and ammonia. Copper salts, acting as a preservative and a coloring matter, are deposited and by the application of a current of air the dissolved cellulose takes a gloss upon drying. This is not the only solvent for cellulose. A hot concentrated solution of zinc chloride converts cotton into syrup. Acetic acid dissolves cellulose and furnishes thus an insulating material for electrical wires.

Ordinary viscoid or viscose is obtained by driving off the water from an alkali-thiocarbonate of cellulose, and this is the mess which is spread on cloths and papers and goes by the trade name viscose. The composition is prepared by treating cellulose with caustic soda and subsequently with carbon di-sulphide. From this mixture artificial silk may be made if the material be forced through capillary tubes and be wound and twisted; and such is the chief purpose to which viscose is put. Laid on cloth the viscose may be printed or embossed or dealt with otherwise according to the purpose in view.

A different process used upon cloths intended for window-blinds for interior decoration and other services for which a glossy finish is desirable, involves a change of principle. In this case the cellulose is converted into the familiar substance celluloid and laid upon cloth. The original of its kind gained fame under the proprietary name of Pegamoid. Here the cellulose is mixed with flake camphor and dissolved in spirit and were the material less inflammable it would deserve greater popularity. But these cloths burn quickly with the clear white light typical of celluloid combs or balls burning.

A process differing in detail and in effect from any of the foregoing is being introduced now by one of the largest manufacturing firms in Lancashire. Closely woven calicoes are subjected to some solvent unknown and the loosened cellulose effectually closes all the pores of the cloth, making it air-tight, stiffer, stronger and stouter than before. When rainproofed it presents an efficient substitute for mackintosh rubber sheeting. It is available for such purposes as racing-yacht sails and not improbably sail-cloth so prepared will be used by the next challenger for the America cup. Many minor uses are being found for this article and a large sale for it is already assured. In a linen-finish it imitates starched linen fairly. Patterns treated in this manner are sent with this article and may be seen on application at the Boston office of the Textile World Record, and inquirers will be placed in touch with the operators of the process.

While something has been done in the conversion of cellulose, more remains to be done. John Mercer, acting more or less in

the dark, was the first to modify cotton cellulose in cloth or yarn by the method now known as mercerization. Lehner, Chardonnet and the pioneers of artificial silk-making have gone furthest in reconstituting cellulose. In the middle course, which consists in doing more than Mercer and less than Lehner—in modifying without radically changing the whole substance—we have made hardly more than a beginning. In England various persons have dreamt of some sort of mercerizing of raw stock in bulk and in Germany there have been attempts to make cellulose from wood-pulp do the work of fibrous cotton. These indicate the extremes and it is perhaps not anticipating too much to say that chemistry and ingenuity between them will produce many novelties yet of which the hinge is the ductibility of cellulose.

AN IMPROVED SPINNING RING.

Various advantages are claimed for a spinning ring and holder recently patented in this country, among which are the following: The ring is fixed in such a way as to be perfectly circular; it is less liable to become sprung out of true than is the case with other rings; it can be more easily restored to its proper shape if it should become warped.

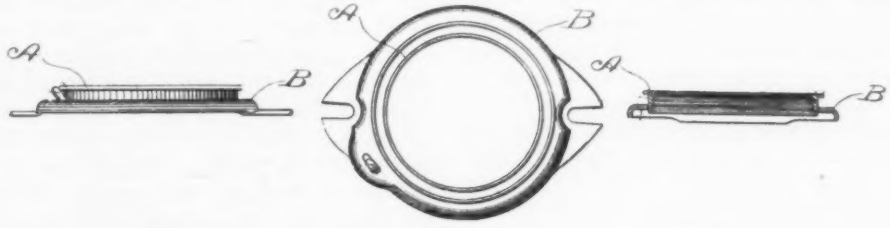


FIG. 1. FIG. 2. FIG. 3.

Fig. 1 is a side elevation of the new spinning ring and holder. Fig. 2 is a plan of parts shown in Fig. 1, Fig. 3 is a section of Fig. 2.

A is the spinning ring, B is the holder for the ring. The ring, A, has a cylindrical body and is provided with a flange at the upper end only. The holder has a central hole to receive the lower part of the body of the ring. This hole is the same size as the exterior of the lower part of the body of the ring or it may be a little smaller than the exterior of the holder. The holder is formed around the hole with a web of considerable width in order to secure enough tensile strength to prevent the holder from being sprung or distorted by expansion when the lower end of the body of the ring is forced into the central hole of the holder. The web is provided with a depending flange which prevents the holder from buckling when the body of the ring is forced into place in the central hole of the holder. The traveler clearer consists of a spur or projection which extends upwardly from the flat web adjacent to the path of the traveler. At opposite sides of the holder are formed projecting lugs in the flange, each pair of lugs having a slot between them, these slots and lugs co-operating with the screws by means of which the holder is secured to the ring rail. The construction holds the flat web elevated above the surface of the ring rail and affords opportunity for ventilation and for cleaning the inner side of the ring without it being necessary to remove either the cop or the spindle.

The ring having been shaped and hardened, it is inverted and pressed on a form, which takes all spring out of the ring and holds it perfectly true. Then while the ring is held the holder is forced on the body of the ring, the ring and holder afterward being dislodged from the form. The tensile strength of the metal of the holder is greater than the tendency of the ring to spring out of true. Consequently after the ring has been forced on the form and after the holder has been forced on the body of the ring, and the two have been dislodged from the form the holder operates by compression upon the body of the ring to maintain the ring in perfectly circular form.

The springing and warping of the spinning ring in the course of the hardening process is due chiefly to the flange, and the difficulty which is encountered in the endeavor to bring the ring back into true shape is due to the same cause also. This flange stiffens the ring, as will be obvious, rendering difficult any change of form in the endeavor to rectify irregularities. The internal strains that are incident to the heating and cooling of the ring as it is being tempered vary in the inner and outer portions of the flange, and to this difference is due largely the warping of the ring. With the object of rendering the inner portion of the flange of the ring independent of the outer portion in a slight degree so as to permit these portions to expand or contract independently of each other in a measure, the flange is grooved as shown. The flange itself, however, remains substantially plane-faced, as this form has been found preferable in practice, although it is not necessary in all cases that the outer and inner portions of the flange should be formed on one level. This affords to the inner and outer portions of the flange a certain capacity for independent adjustment to internal strains which relieves and very much lessens the tendency of the ring to become warped as it cools. This grooving also confers upon the ring a certain degree of flexibility which facilitates the operation of compressing it into shape in the holder.

CULTURE AND MANUFACTURE OF FLAX IN JAPAN.

BY CHARLES RICHARDS DODGE.

The writer has just received from Mr. Suzuki, of the Hokkaido Flax Spinning and Weaving Co., Sapporo, Japan, some very interesting samples of scutched flax and dressed linen produced in Japan. This flax resembles in appearance the Flemish flax of the Courtrai region of Belgium, it having been prepared after European methods. Mr. Suzuki has spent the greater part of the present season in Europe studying both flax culture and manufacture in order to improve the Japanese product. The flax is not so light as the Courtrai, though even in color; it is soft and creamy and shows superior strength, though lacking in the oiliness which characterizes the best of the European flaxes.

In a recent letter Mr. Suzuki makes inquiry regarding quick-retting processes, and shows a lively interest in the subject. In his investigations, however, he has not found a successful process. Regarding the samples of fiber produced by artificial processes that he has seen he states that "the results are not satisfactory; some of them show a bad color, some of them no shine (lacking in glossiness) and others are harsh and with coarse fiber." Doubtless if the Japanese desire a quick retting process they will have to invent it, though the old way will always remain the best.

The Japanese are making wonderful progress in the textile industries along these lines. Among the new industries may be mentioned linen drawn work. According to late advices from Consul Miller of Yokahama, the linen is imported from Ireland, and the work is performed by men, women and children, who produce large quantities in the country districts, by contract, the wages ranging from 10 cents to 40 cents a day. In this work is represented table linen, dress-goods, etc., including embroideries upon a great variety of ladies' wear such as silk waists, gowns, etc. The products are re-exported without duty to the United States. Recently a large business has been developed in the manufacture of collars and cuffs for the American market. To illustrate the up-to-date methods of these people, the goods are adapted to the market where they are to be sold, and the designs are chiefly imported from the United States.

The forerunner of the present Manchester Royal Exchange was built in 1729 by private funds and was intended "for chapmen to meet in and transact their business."

The chief exports of Switzerland in the order of their value are silk goods, cotton goods, food stuffs, watches and clocks; the principal imports, food stuffs, silk, cotton, iron and steel manufactures.

Questions and Answers.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Calculating Gill Box Drafts.

Editor Textile World Record:

I have read with much interest your answer to this question in your November issue and wish to say that I think your method of figuring is very simple and easily understood and no doubt is theoretically correct. It would also be found correct in everyday practice if the rolls were smooth and we could do without the aprons, but as we must have fluted rolls and aprons, we have a condition that affects the draft a great deal more than most overlookers are aware. It is quite common to find the draft of a two-spindle gill box much

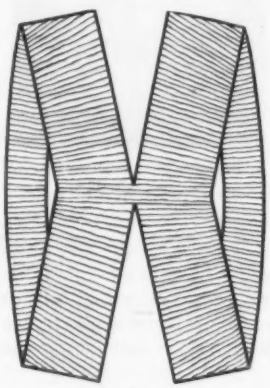


FIG. 1.

shorter on one side than the other. This fault can be overcome a great deal if aprons of the same thickness are used.

Some years ago I discovered that if I had my aprons in pairs, Fig. 1, I would get the drafts more even from the double can and the two-spindle gill boxes. However, I have never found any pair of aprons, even though they had been cut from the same hide, that would deliver absolutely the same draft, and for this reason I am a great believer in the use of the yardstick for ascertaining drafts. This method is as follows: First, tie a piece of cord on the slubbing close to the twizzel of the flyer; second, measure one yard of the sliver behind the back guide (which is just outside of the back rolls); third, hold the finger and thumb on the sliver (36 inches from the guide); fourth, start the box and avoid putting any drag on the sliver. When the sliver has run into the back rolls one yard (finger and thumb up to the guide), stop the box and measure the number of yards and fraction of yards delivered. This will give the actual draft. For example, one yard in the back rollers and 6 1/4 yards between the cord and twizzel would mean 6 1/4 draft.

Thomas Hill.

Core Yarn.

Editor Textile World Record:

We enclose a sample of core yarn and would like you to advise us how this yarn is made; that is, how the cotton thread is inserted.

Elm Hill (783).

A number of years ago I experimented with this yarn, making it first on an ordinary twister by running a cotton thread and a sliver of carded roving from the woolen finisher card together, and obtained encouraging although imperfect results. Later I learned of a better method, which consisted in running the carded cotton thread back of the whip roll through the rub rolls of the condenser on a woolen card and letting the condenser rolls rub the carded sliver around the cotton. In this way I obtained very good results indeed and have samples of cloth woven with both warp and filling made of this core yarn. The sample submitted has two core threads and I am in doubt whether these two were run together behind the whip roll, or whether two core threads were taken from the card and run on the twister. Possibly it was made by a third method by which the loosely twisted two-ply cotton thread was run on the card.

A. Sedal.

Figured Patterns.

Editor Textile World Record:

I would like to have an explanation of how to determine the warp and filling threads in a weave pattern whose size bears a certain relation to another pattern in which the number of threads are known. For example, a pattern has 30 threads in the warp and 24 in the filling. How many threads will be in a pattern 2 1/2 times as large keeping the warp and filling threads in the same proportion as in the smaller pattern? I have rules for this calculation, but no explanation of them.

Lamp Wick (740).

The ratio between the warp or filling threads of two proportionate patterns is equal to the square root of the ratio between the areas of the two patterns. This is shown by the following formulas, in which

a = warp threads in given pattern.
b = filling threads in given pattern.
c = area a b.
d = ratio between c and e.
e = area x y.
x = warp threads in new pattern.
y = filling threads in new pattern.
a b d = x y.
a ÷ b = x ÷ y.
$a^2d = x^2$.
$b^2d = y^2$.
$a\sqrt{d} = x$.
$b\sqrt{d} = y$.

Applying these formulas to Lamp Wick's problem we have

$\sqrt{2.5} = 1.58$.
30 × 1.58 = 47 warp threads.
24 × 1.58 = 38 filling threads.

This gives a pattern with (47 × 38) 1,786 points, which is practically 2 1/2 times (30 × 24) 720 points.

The Analysis of Elastic Fabrics.

Editor Textile World Record:

I have read with interest the Question and Answer, No. 703, in the August issue, entitled Cause of Difference Between Two Elastic Fabrics, and would like you to explain the method of analyzing such goods. We manufacture elastic webbing and find considerable difficulty in duplicating samples of which many are submitted to us for that purpose. Generally we have to make a number of trials before getting a webbing that will match the sample as sent by the customer. We judge from your reply to Henry Barnes that you have some exact method of determining the structure of a sample of elastic webbing. It would be a great thing for us if we knew how to find out the lay-out of a sample, including the size of the rubber thread as well as of the cotton yarn. We are now having trouble with the rubber in our goods. It deteriorates rapidly in the goods.

Milo (724).

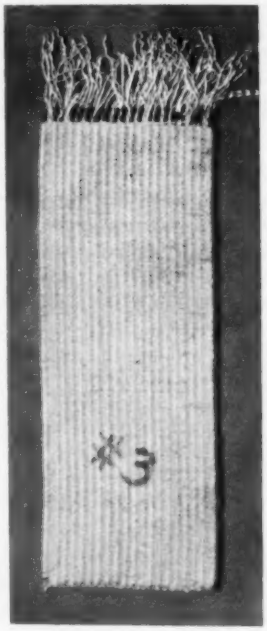
The analysis of elastic webbing presents some peculiar problems arising from the construction of the rubber thread. The process is simple, however, and can be best explained by analyzing a sample. For this purpose we will take sample No. 3, one inch wide, shown in the accompanying illustration.

A piece of any convenient length, say 4 inches (1/9 yard) is cut and found to weigh 20.1 grains. The yards per pound are found as follows:

20.1 grains per 4 in. = 180.9 grains per yard.

7000 (grains per lb.) ÷ 180.9 = 38⅔ yards webbing per pound.

The picks are counted under a glass and number 128 per inch, 2-ply cotton. The filling is raveled for as many picks as can be drawn from the cloth without cutting the warp or breaking the filling. This filling is then measured. In this case 62 picks were found to measure 69 inches, equal to



NO. 3.

570 inches for the 512 picks in the 4-inch sample.

The warp is now examined and found to consist of three kinds of material: rubber, 2-ply cotton not interlaced with the filling, but running free alongside the rubber; and 2-ply cotton, interlaced with the filling, consequently longer than the other cotton threads.

The filling is next carefully cut along one edge of the sample for the whole length of the sample to permit the raveling of the warp from the filling. Each kind of material is kept separate and weighed, the length of each kind of warp carefully measured and number of threads counted, with the following result:

20 E rubber 1 7/16 inches,	2.7 grains.
36 E short warp 6¼ inches,	2.3 grains.
61 E long warp 8⅜ inches,	4.1 grains.
Filling 570 inches,	11. grains.
	20.1 grains.

From these particulars the sizes of the rubber

thread and cotton yarn are calculated as follows:

Rubber:

20 ends $1\frac{7}{8}$ inches long = $28\frac{1}{4}$ inches.

$28\frac{1}{4}$ in. weighing 2.7 grains = 2070 yds. per lb.

2070 × $1\frac{1}{5}$ = 2484,

Sq. root 2484 = 49.8, No. of rubber.

The size number of square rubber indicates the size in fractions of an inch, thus No. 43 rubber when new measures 1/43 inch square. The number is equal to the square root of five-sixths of the yards per pound, as above.

Short warp:

36 ends $6\frac{1}{4}$ in. long = 225 inches.

225 (in.) ÷ 2.3 (gr.) 98 inches per grain.

98 (in.) ÷ 4.32 (in.) = 22.7 = 2/45.4, Cotton No.

Long warp:

61 ends $8\frac{1}{4}$ in. long = 511 inches.

511 (in.) ÷ 4.1 (gr.) = 124.6 in. per grain.

124.6 (in.) ÷ 4.32 (in.) = 28.8 = 2\57.6 Cotton No.

Filling:

570 inches weighs 11 grains.

570 (in.) ÷ 11 (gr.) = 51.8 in. per grain.

51.8 (in.) ÷ 4.32 (in.) = 12 = 2\24, Cotton No.

The 4.32 inches in the above calculations is derived from the cotton count, which indicates the number of 840-yard lengths per pound or 4.32-inch lengths per grain.

Summarizing the results of the calculations we have:

Webbing	$38\frac{1}{2}$ yds.	1 in. wide per pound.	
Rubber wp.	No. 50,	2.7 grains	13.4 %
Short wp.	2/45s	2.3 grains	11.4 %
Long wp.	2/58s	4.1 grains	20.4 %
Filling	2/24s	11. grains	54.8 %
			20.1

As the yarn was measured after raveling from the cloth no allowance is made for take-up. The calculated size of the rubber thread is less than the original size because of the increase of length caused by the tension under which the rubber is held in the cloth; also because of the absorption of the rubber by the surrounding cotton, the amount varying with the kind and quantity of adulterants used in the manufacture of the rubber thread, also with the length of time since the cloth was woven.

Silk Bolting Cloth.

Editor Textile World Record:

What kind of silk is used in the enclosed sample? Is it raw silk or boiled off? What kind of finish is used? Stone (742).

The sample submitted is one of the well-known fabrics called bolting cloths, largely used in the flour milling business. The qualities they must possess are fineness of texture, extreme regularity of material and weave, hardness of thread, freedom from any hairiness or lumpiness, and great regularity.

It is essential that only the very finest quality of silk should be employed for this purpose and that the reeling be done in the most perfect manner, to ensure the necessary regularity. The proper silk to use would be the best extra classical Italian or Piedmont, reeled specially for the purpose. In the sample submitted the warp is made of 3-thread organzine from 14/16 denier grege and the filling is of 6-thread tram from 14/16 denier grege.

The reelers who reel silk for this purpose frequently add some sizing mixture to the water of the bassines in which the cocoons are floated to give the silk filaments extra cohesion. During the weaving the warp and filling must be kept wet. The filling quills may be kept in a bowl of water and the warp kept wet with a sponge or other means.

After weaving the goods are sized. This can be done "au mouiller," that is, passed through a trough of size between squeeze rollers, or the sizing may be put on by hand with a sponge. They are then dried on a tentering frame. Each maker will have his own sizing mixture, which he will naturally consider the best. In making these goods the silk is not boiled off either before or after weaving, but is used just as it comes from the throwster. James Chittick.

Stripping Cotton Cards.

Editor Textile World Record:

I would like some information on the action of the stripper in the carding engine and how to set the cards. Norfolk (786).

An article on this subject will be found in another part of this issue.

Glue for Iron Rolls.

Editor Textile World Record:

Can you give me a recipe for making a good glue for roller-covering leather to be glued to iron, leather or wood? Alton (784).

A recipe for glue to fasten leather to iron rollers will be found on page 129 of our issue of September, 1906.

Sizing Jute Yarn.

Editor Textile World Record:

Can you give me a formula for sizing jute yarn so that the fibre will be smoothly laid and polished? This is a new undertaking for me and I find it quite different from the polishing of cotton yarn. Westerly (767).

We take the following from Woodhouse & Milne, "Jute and Linen Weaving," which bears on the question asked by Westerly:

"Sizing mixtures are so varied in character and object, and opinions are so different as to the benefits derived from any special compound with respect to its application to similar warps, that it is impossible to give more than a very general indication as to how they should be composed.

"In the jute trade special loading agents are seldom employed, the dressing mixtures being generally restricted to the common adhesive substances (farina and wheaten flour), with the addition of some softening material (tallow or oil), and an antiseptic (invariably zinc chloride). This being so, the mixtures are very simple in character, and the proportions of farina and flour, or of both combined, to that of water vary between one quarter of a pound to one pound per gallon, just as the dressing is required to be light or heavy; the proportions of materials used, irrespective of water, being approximately:

Farina or flour	90 per cent.
Softening agent	5 to 8 per cent.
Antiseptic (when flour is used)	2 to 5 per cent.

"It is usually considered unnecessary to use an antiseptic where farina is the only adhesive substance used. Zinc chloride, however, is often introduced into such mixtures to fulfill the double purpose of a deliquescent and weighting agent."

Salary of a Dyehouse or Printhouse Chemist.

Editor Textile World Record:

I notice in your August issue a statement made by Dr. A. Herz in a paper read before the Bradford Society of Dyers and Colorists, that the salary of a chemist in an English dyehouse or print works varies from $3.50 to $10.00 a week. This seems to me to be very small, and I would like to ask if the figures are correct.

Bancroft (787).

We have made some inquiries regarding the statement in Dr. Herz's paper to which "Bancroft" refers and are informed by an English correspondent that chemists in English dyehouses and print works are paid from $2.50 to $10.00 a week. He states that the average English manufacturer is strongly opposed to paying more to a scientifically trained chemist. The average manufacturer, he states, does not understand the value of scientific methods applied in practical work, citing, as an illustration, the fact that the Bradford Dyers' Association, with thirty-six branches, have two chemists whose salaries are $2,500 and $1,500 per year respectively, while the salaries of the other twenty range from $2.50 to $10.00 per week; in exceptional cases to $15.00 per week. Our correspondent adds that men who have taken an entire three years' course at the Yorkshire College at Leeds are engaged at a rate of $3.75 a week. We cannot vouch for the correctness of these figures, but would be glad to hear from any of our correspondents who may be conversant with the subject.

Numbering Cotton Duck.

Editor Textile World Record:

How is the weight of cotton duck calculated from the number and width? I would like an explanation of the system of numbering cotton duck.

Concord (710).

For numbering heavy sail duck a cloth weighing 18 ounces per running yard 22 inches wide is taken as a standard and called No. 1. For each ounce below 18 the number is increased by 1. Thus, No. 2 duck weighs 17 ounces per yard 22 inches wide; No. 3 duck, 16 ounces, and so on. Duck heavier than 18 ounces per yard is numbered by ciphers, a cipher being added for each ounce increase in the weight. Thus, 1/0 duck weighs 19 ounces per yard 22 inches wide; 2/0 duck weighs 20 ounces per yard 22 inches wide, and so on. Duck is made as heavy as 20/0, which should weigh 38 ounces per yard.

The width of 22 inches is the standard for numbered duck and the weight per running yard for other widths is in exact proportion to the width. Thus, 24-inch duck would weigh 1/11 more than the standard 22-inch goods, while 11-inch duck would weigh per running yard one half as much as the standard 22-inch goods. For example: No. 8 duck, which weighs 11 ounces per yard 22 inches wide, would weigh 12 ounces per yard 24 inches wide. Again, 2/0 duck, which weighs 20 ounces per yard 22 inches wide, would weigh 10 ounces per yard 11 inches wide. The following table shows the special range of numbers and weights of 22-inch sail duck and will illustrate the system of numbering:

2/0=20	ounces	per	yard	22	inches	wide.
0=19	"	"	"	"	"	"
1=18	"	"	"	"	"	"
2=17	"	"	"	"	"	"
3=16	"	"	"	"	"	"
4=15	"	"	"	"	"	"
5=14	"	"	"	"	"	"
6=13	"	"	"	"	"	"
7=12	"	"	"	"	"	"
8=11	"	"	"	"	"	"
9=10	"	"	"	"	"	"
10=9	"	"	"	"	"	"

Light cotton ducks are not numbered by this system. The weight of these light goods is indicated by the regular method used for woolen and

worsted goods, that is, by the ounces per running yard regardless of the width. Thus, a 10-ounce duck 30 inches wide would be a slightly lighter fabric than a 10-ounce duck 28 inches wide by reason of the difference in width.

The weight and number of cotton duck, as well as the size of the yarn in it, can easily be determined from a small sample. A piece having an area of 1/300 square yards (1.8 by 2.4 inches) is cut and weighed. The number of grains in the weight of such a sample is equal to the weight in ounces per yard 52 1/2 inches wide. The weight per yard for any other width is then calculated by proportion. The size of the yarn is found by dividing the threads per inch by the number of grains in the weight of the yarn in the sample. Thus:

Ex. A sample of duck 1.8 inches by 2.4 inches weighs 23.9 grains. There are 40 ends of warp and 36 picks of filling per inch. Find number of duck and average count of yarn.

23.9 grains = 23.9 ounces per yard, 52 1/2 inches wide.

(23.9 ozs. × 22 in.) ÷ 52 1/2 inches = 10 ounces per yard 22 inches wide, or No. 9 duck.

76 (40 + 36) ÷ 23.9 = 3.2, average count of cotton yarn.

The count of the single yarn in warp and filling is found by raveling and weighing the warp and filling separately, then dividing the ends per inch by the weight in grains respectively, and allowing for the number of strands in the ply yarn.

Stripe in Silk Goods.

Editor Textile World Record:

How is the pile stripe woven in the accompanying sample of silk goods?

Potsdam (756).

The sample, Fig. 1, is a silk stripe in which a portion of the stripe is made with a velvet pile. The two velvet stripes, which are the same color as the foundation cloth, can be made in two ways; First, in the same manner as double plush or velvet ribbons are made. That is, two ribbons are woven one above the other with the pile weaving between and a knife fixed to a cord or chain running back and forth between the two cloths separating the pile. The pile threads are placed on separate spools or a special beam. I think the sample is made in this manner as the pile is formed from the warp. The second method is the one generally used for velvets, that is, using a straight velvet cloth weave; the cloth is cut afterward by machine or hand knives. With this method the pile is formed by the filling.

Will Nelson.

This fabric is made with a combination of weaves. The ground has 276 warp threads and 76 filling threads per inch. A combination of this kind produces a fine ribbed or rep effect. The combination of colors is as follows: claret warp and filling for ground; blue, green, black, yellow and claret for striping.

The stripes are composed of the following weaves: stitch effect, satin and velvet. The stitch weave is made by the warp threads floating over five picks and then bound by one. The satin stripe is a six harness satin weave. The velvet stripe is made in the usual way by using wires at the end of which is a knife; upon certain picks a wire is inserted over which the pile warp is floated and then secured into the body of the cloth. During the withdrawal of the knife or wire the warp threads passing over it are cut.

Joseph Hargreaves.

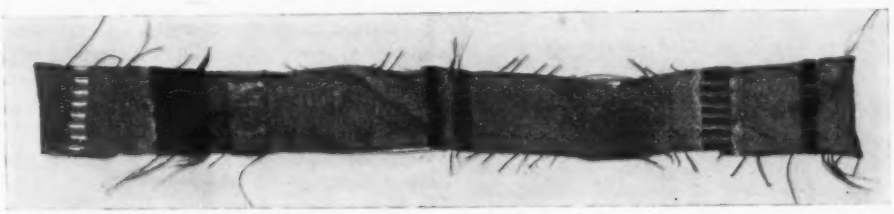


FIG. 1.

Combed and Carded Cotton.

Editor Textile World Record:

What are the comparative values of short cotton combed and long cotton carded, and what results are to be obtained with the yarn produced from each? Adams (752.)

I do not consider it practicable to comb short stock, as it gives considerable trouble and does not work well. When short stock is worked much it is very tender until it gets to the twisting process. Unless quite heavy the laps would not run well back of the comber and it would be hard to keep the ends running on the table of the comber. The sliver would have to be handled very carefully and would even then be liable to break back of the drawing frame and slubber.

Our machine builders claim their combers will

comb stock from 7/8-inch to 2 1/2 inches. They will; but I would not care to run the 7/8-inch stock. The comber is designed for long stock for a fine, even thread free from nips or bunches.

It is not well to make warp yarn finer than 30s, or filling finer than 40s, from stock 1 1/8 inches or shorter. It is done, but the yarn is not what it should be. For finer counts longer stock should be used if good results are desired.

Robert Adams.

Viscose Work.

Editor Textile World Record:

Can you give me any information in regard to the so-called viscose work on cotton or paper? I would like to know how it is done. The samples enclosed came from England and it is claimed that a prolonged boiling will not affect their appearance or quality. Seymour (790).

In another part of this issue is an article by an English writer on this subject.

Power for a Blanket Mill.

Editor Textile World Record:

Our mill is equipped with three sets of 60-inch Davis & Furber cards, six mules of 330 spindles each, one 40-inch burr picker, one 48-inch mixing picker and 26 broad looms, besides wool washers, cloth washers, fulling mills and napping and drying machinery, sufficient to make 1,000 pairs of blankets per week. We want to increase our production to 2,000 pairs per week and think we can do it by adding two more sets of cards and four mules with the other finishing machinery necessary. We now have one 150 h. p. boiler and a 75 h. p. Corliss engine. Have we power enough to run the enlarged mill? Morley (689).

This question involves so many factors unknown to us that we are unwilling to take the responsibility of advising Morley regarding the power required for the enlarged mill. It is a problem that should be placed in charge of a competent engineer. The cost of an engineer's services is a very profitable investment to any manufacturer who intends to make alterations in his plant. We are informed that 5 h. p. is an ample allowance for a set of cards consisting of two breakers and a finisher, 60 inches wide and 48 inches diameter, and 2 1/2 h. p. is ample to drive a 330-spindle Davis & Furber mule. We are inclined to think that Morley's engine now has all the work it can do and that enlarging his mill will necessitate enlarging his power plant also.

Morley proposes to increase the size of the 5-foot pulley to 7 feet, but this will necessitate increasing the speed of the engine 40 per cent. and the power of the engine to 150 h. p. This of course is based on the steam pressure following the piston head one-half the length of the stroke. If the steam pressure follows the piston head for three-quarters of the length of the stroke, it will increase the power of the engine to about 157 h. p., but the engine will be carrying a heavier load than it was built for. Still many engines are running about 50 per cent. above the rated capacity, and I have no doubt he will at times use as much as 150 to 160 h. p. If he has a dynamo to furnish electric light he may have to arrange to stop his pickers when the dynamo is running or else run the dynamo with a separate engine, which would be a very good plan as it would leave his main engine with a regular and even load to carry. I think his boiler will furnish all the steam he will require in a blanket mill where there is not much steam required for the dye house.

Winton.

I do not consider it possible, certainly not practicable, to try to run a six-set blanket mill with only 75 h. p. as the minimum power, though of course the engine may run a little over its rating. If the engine is running non-condensing it would probably help to a certain extent to run it condensing. It is never economical to work boilers or engines to the maximum capacity. From the point of economical efficiency a mill of the proposed size should have one engine of 150 h. p. and it is more economical to run condensing with heater in connection with the exhaust and feed water. This will give a margin for some additional machinery being put in from time to time. With an engine of this size of course it would be necessary to have two boilers of a steam capacity of 200 h. p. Probably a second boiler of 100 or 150 h. p. would be desirable to supply steam to the engine and dye house, the latter probably being small if white blankets are made. At one time I was connected with a six-set plant that had both steam and water power. The engines were of several units, in fact there were four engines of combined power equal to 200 h. p. There were seven boilers of the old fashioned small type. We used hard coal for fuel and it required the four engines to give sufficient power except at the seasons when the water power was above normal. When running the four engines we were obliged to shut down several times a day to "get up steam," and it was finally decided to remodel the plant. The old engines were discarded and one 150 h. p. Corliss engine installed with the result that the power was first class; the amount of fuel consumed was reduced and there was always plenty of steam.

This is given to illustrate the cost of having the

steam power of small or medium sized plants made up of several small units.

In another plant that was short of power the speed of the engines was increased to such an extent that the builders declined to be responsible for results; the increased power was not commensurate with the greatly increased cost of the fuel.

In regard to increasing the power by increasing the size of the pulley, there is no doubt a large bell will transmit more power, but we are considering the question of initial power and for that reason I do not consider the pulley to be a factor in the matter. I estimate the proposed plant will require from 100 to 125 h. p. (in actual use by the indicator) depending on circumstances and conditions. Arthur Bremner.

I think Morley could get the power required from a 75 h. p. engine by increasing the size of the pulley on the main shaft and running the engine fast enough to give the speed wanted. There are several things to be considered, however, such as the length and the width of the belt and the thickness. Then too much depends on the condition of the shafting, and if the engine is located in the center instead of one end of the mill. The belts should be large enough to give more power than is needed in order that they may be run as slack as possible. Nothing is said about lighting the mill, but if they are to run a dynamo the present power would not be enough for the extra work required. Norwich.

It is very difficult to estimate anywhere near the power required to run a set of woolen machinery as the conditions in each mill vary so widely. A set in one mill may be very different from a set in another because of the great advance in machinery and the consequent difference in the size and weight. Without the details of all the existing conditions in a given mill of any size it is impossible to give an exact estimate of the power required.

To form an idea of the power required for any mill it would be necessary to know whether the plant was an old or a new one. In an old plant the buildings are likely to be of light construction; the foundations imperfect; floor timbers wide apart; a long distance between hangers and shafting, with the shafting light and pulleys small; belts tight and shafting sprung by them and out of line. In a modern building the foundation is firm; the floor timbers heavy and reasonably near together; hangers, shafting and pulleys of large size; the belts of sufficient width to give a large margin over and above what is required to drive the machinery. Again there is a great difference between the power required to drive the old fashioned light machinery of small capacity and that required to drive the heavy modern machinery.

The mixing picker may be 48 inches, but is it a modern 48-inch Fearnaught or spur tooth picker, or a plain, light, old-fashioned mixing picker? Has the burr picker a double or a single burr cylinder? Are the cards 60 inches wide and 60 inches in diameter, or 60 inches wide and 48 inches in diameter? Does a set consist of two, three, four or more cylinders? Is the spinning machinery of the light self operating or of the heavy mule pattern? Are the spindles driven with sectional or individual bands? It makes a big difference in the amount of power required to drive spinning machinery whether the bands are individual or sectional as can be proved by making an experiment.

There is also a difference if the spooling frames are of 40 or 60 ends; whether they are of the modern compressor type or of the old-fashioned spool and drum type without compressor. Are the dressing frames of the old light type or of a modern heavy type with fast running beamer with heavy warp compressor? Are the looms of a plain light pattern or modern, heavy fast running fancy looms of the latest type? Is a large variety of finishing machinery used in the finishing of the goods? Are the fulling mills light or heavy? Are the washers small or large? Does the mill scour its own wool and use scouring and drying machinery?

All these things and many others have such to do with the power that would be required and it is only by knowing all the conditions that the amount of power can be estimated. The writer had one mill tested as to the amount of power required to run it. The seven sets of cards varied from 40 inches to 60 inches in width and diameter. There were three and four set cards and a like variation in looms and finishing machinery. The total amount of power consumed for the seven sets as indicated on the engine was 100 h. p. when running on heavy weight work, yarn running from 1¼ to 2¾, of 14 h. p. per set. This mill at the same time was making its own shoddy, on light weight work running from 3-run to 5-run yarn, the same mill required only about 80 h. p. as on light weight work no power was required to run shoddy machinery: at the same time the work was so much lighter on the cards, spinning, twisting and warping and finishing machinery. Years ago on old machinery of the type then used, I believe the estimate was 15 h. p. for the first set and 10 h. p. for each additional set. Today a more ac-

curate estimate would be 20 to 25 h. p. per set for a modern mill with up-to-date machinery.

I believe the best policy for the inquirer is to get some practical engineer to indicate the engine under its present load and estimate how much power is now being used. A capable engineer could judge whether the engine will be able to run the additional two sets of machinery with necessary additions. It will be money in pocket to know the exact conditions to begin with.

R. G. H.

It is impossible to answer this question definitely without knowing the exact conditions at the mills. By forcing the engines it will be possible to get 100 and perhaps 110 h. p. and the rest of the boiler capacity in connection with the exhaust steam will be sufficient for dyeing, drying and heating purposes. If the main shaft now runs the proper number of revolutions to give each of the machines a certain speed it would not be advisable to increase the diameter of the pulley on the main shaft without increasing the driving pulley on the engine, otherwise the speed of the main shaft would be decreased and it would be necessary to increase the driving pulley of each machine correspondingly. The simplest way to transmit the increased power from the engine to the main shaft would be to add, say, 30 per cent. to the width of the pulleys and use correspondingly wider belts.

It is safe to say that it requires 15 h. p. per set of cards 48 inches wide to run a woolen mill and the power of the mill increased as contemplated would be in round numbers:

Picker room	6 h. p.
Card room	18 h. p.
Spinning	24 h. p.
Weaving	26 h. p.
Finishing, etc.	10 h. p.
	84 h. p.

James Wasco.

Jute Counts.

Editor Textile World Record:

What does the "pound standard" as applied to jute yarn, indicate? How is it reduced to the cotton count? Ipse Dixit (744).

The "pound" size of coarse jute yarn indicates the weight in pounds of 14,400 yards. This is equivalent to the ounces per 900 yards or to the grains per 2 2/35 yards.

The cotton count, indicating the number of 840-yard lengths per pound, is equal to the number of 14,400-yard lengths per 17 1/7 lbs. From this it follows that the weight of 14,400 yards in pounds is equal to 17 1/7 divided by the cotton count; also that the cotton count or number of 840-yard lengths per pound is equal to 17 1/7 divided by the jute "pound" count.

Ex. Find the jute "pound" count of No. 10 cotton.

17 1/7 (constant) ÷ 10 (cotton No.) = 1.7 lb. jute.

Ex. Find the cotton No. of 2 lbs. jute yarn.

17 1/7 (constant) ÷ 2 (lbs. jute) = 8.6 cotton No.

Conditioning Apparatus.

Editor Textile World Record:

I have been much interested in the question regarding the conditioning of cotton yarn, signed by "Lachine Rapids," also in the reply, and would like to know where I can get apparatus for conditioning raw stock and yarn. If possible, I would like to install an apparatus in my mill by which I could test each lot of material as it is received, and thus determine the bone dry weight received, which is the only basis on which the real value of the material can be determined. I would like to have a description of the apparatus required and if possible an idea of the cost and where is can be obtained. Diogenes (778).

In another part of this issue is a description of a German conditioning apparatus which will give part of the information required.

Temporary Protection for Invention.

Editor Textile World Record:

Please inform me of the best and cheapest way to get temporary protection for a new device. I have several improvements which I would like to protect before bringing them to the attention of people who might wish to buy and use them.

Detroit (765).

Temporary protection for a new device, before patenting, can be obtained by means of a caveat. A caveat is a description of an incomplete invention, which an inventor who desires time to complete his invention may file in the patent office on payment of the proper fee. It entitles the inventor to notice, within one year, of the filing of an application for a like invention. After such notice, the inventor must file a complete application within three months, or lose the benefit of the caveat. If the subject of the caveat has already been patented, it will be recorded, but not further noticed. No caveat should be filed if the inventor believes his invention to be complete. The government fee for filing a caveat is $10, besides the recording charge and patent attorney's charge. We would advise Detroit to consult a reputable patent attorney, whose services would be well worth their cost in insuring protection.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

During the past month prices have shown a hardening tendency due to the condition of the raw material market. Prices of yarn have also shown an advancing tendency and there is nothing in sight to indicate any lower prices on knit fabrics for some time to come. Any manufacturers who are in a position to accept further business are waiting for the buyers to talk first, and the chances are, as soon as it becomes evident that there is more business to be booked, still higher prices will be asked. So far we cannot learn that any second orders have been placed on standard fleeced lines at advance prices, although several manufacturers have been asking advances for the past two weeks and we know of orders having been placed on sub-standard goods at advances of 5c. and 10c. per dozen.

This season, buyers have gone into the ladies' carded yarn ribbed goods business so largely that it may be said to be in a very satisfactory condition in regard to business placed. A large volume of the orders have been for 6-pound goods at about $1.95 for early delivery and $2.00 for late delivery and there is now talk of an advance of five cents per dozen.

Ladies' combed yarn ribbed goods are in a well sold-up condition. Nevertheless, several lines may still be had and at opening prices.

A noticeable increase has developed in the demand for ladies' bleached ribbed goods, and several manufacturers are making their plans to increase their bleaching facilities to meet this call.

Carded yarn bleached ribbed vests and pants made on fine stitch machinery are being shown at $3.12 1/2 to $3.25; and suits at $5.25 to $6.00, on which fairly large orders are being placed. These, of course, do not look nor feel as well as the combed yarn goods, but as the bleaching process destroys the specks in the carded yarn, the manufacturers can produce goods that look fairly well and will sell readily at the reduced prices.

An increasing demand is noticed for men's medium weights, particularly in the smooth finished worsted fabrics. To meet this demand, the Ford Manufacturing Co. are showing three numbers that are quite sure to be large sellers. They are worsteds at $10.00, $12.00 and $14.00 respectively.

The Fitwell Knitting Co. are showing a light weight wool garment at $7.50, on which it is reported some very large orders have been placed.

It is evident that more people are wearing all cotton goods each winter and several manufacturers are now turning out large quantities of men's combed ribbed garments, both in shirts and drawers and combination suits.

The Cooper Mfg. Co. are asking $7.50 net for their garment. Wright's Health Underwear Co. also have one at the same price. The Taunton Knitting Co. had one in the market early at $7.50 regular, but have since advanced it to $7.50 net and report they can now take orders only for late delivery at that price.

Wool underwear is reported to be in a well sold-up condition. Prices are practically the same as last year and qualities very nearly so. Most manufacturers say they will deliver identically the same grades as delivered in 1906 at the same prices and terms.

There has been considerable call for merino scarlets to retail at $1.00, to take the place of the wool scarlet goods, which are now practically out of the market at this price. As a consequence of this, mills like the Harmony, Paragon, Victor and Fitwell are all showing these goods at about $7.50 regular. We are informed that more orders have been placed on scarlet goods for 1907 than for any one season in several years past.

The Waterford Knitting Co. report that they have taken a very large business on their line of "Royal Standard" goods in natural and camel hair at $9.00 and $12.00 less 12 1/2 per cent. These are similar in character to the Root lines.

The business on ladies' combination suits continues to grow each season and many manufacturers who have not heretofore made these goods are now showing them in their line.

The Fashion Knitting Co. have a bleached cotton union suit at $3.75 and there are a number of carded peeler garments, weighing from 10 to 11 pounds at from $3.50 to $3.75. The most popular selling cotton suit is a fine stitch garment made on combed yarn with imitation hand trimming which may be bought at $6.75 for the peeler and $7.00 for the combed bleached.

The Camden Knitting Co. are showing an entirely new line of suits for 1907, consisting principally of fine stitch garments and they have made a complete change in their line of trimmings and now have a very handsome range at from $7.50 to $19.00 per dozen.

HOSIERY.

The recent improvement in the demand for fall lines has been well maintained and even shows more improvement. Orders thus far taken compare favorably with those placed up to date last year. Prices are now being slowly advanced to a basis warranted by the present market condition. Some of the larger buyers have been recently looking about for manufacturers who are in a position to take orders for delivery before June 15th, either on staple or fancy lines of light weight goods. There seems to be a general impression among them that there will be more of a scrambling for goods the coming spring than there has ever been in the hosiery business and it is said that even if all the goods that are on order are delivered, there will still be a scarcity. It is certain that a large number of orders now booked will not be filled, owing to the extreme scarcity of yarns, particularly on fine counts.

The situation on embroidered, extracted, prints and lace goods is quite as serious as on staple lines and this is true on all numbers, except the very lowest priced goods. The fact that lace goods will be scarce is not due to any great demand, as in some former years, but the output has been restricted, as considerable machinery on which lace goods have heretofore been made has been changed over to make fine gauges.

Split foot goods in all grades continue to be as scarce as the proverbial hen's teeth, and the call for them at retail counters is increasing every day.

SWEATERS.

Buyers have been giving considerable attention to the sweater business during the past month and indications are that this branch of the business will be in good condition by the end of January. The production of these goods for 1906 has been smaller than for several years past and stocks are now well cleaned up. Several small manufacturers have discontinued making them, and, consequently, the production is now in the hands of a few makers and should there be anything like an active demand, there is sure to be a scarcity.

Inquiries at retail counters show an increase in calls for sweaters. This is a matter that those manufacturers who are in a position to turn some machinery to this class of goods, should look into carefully.

It is estimated that the United States has 1,294,798 silk throwing spindles in operation.

Saxony is the leading state of Germany in the production of textiles.

It is estimated that there are one million persons in Germany engaged in the manufacture of textiles.

In the German Empire there are 100 schools for instruction in textile manufacture.

It is said that Italy produces every year 110,000,000 pounds of silk worm cocoons, having a total value of $30,000,000.

In the last thirty years the world's supply of raw silk has almost doubled, the most notable increase coming from Japan and the Levant.

THE MANUFACTURE OF BRAID.

BY NICOLAS REISER, in Handbuch der Weberei.
(Translated from the German.)

Braid is formed by an interlacing of several strands running in a diagonal direction, each strand passing alternately under and over one or more of the others. As a consequence at least three strands or threads are necessary to make braid. Two strands can be twisted or looped together, but not braided. A wide variety of material is used for braids, including hair, straw, bark, wire, cane, etc. The greater part of braid material, however, consists of wool, cotton, silk, linen and metal thread. Braid is classified as follows: 1. Flat braid; 2. Round braid or cord; 3. Lace braid.

Flat braid consists of a number of threads which zigzag from one side of the braid to the other. Each thread passes alternately under and over one or more of the others as shown in the lower parts of Figs. 7 to 11.

Round braid or cord is formed by an interlacing of two sets of threads, of which one runs to the right and the other to the left. The interlacing consists in passing the threads of each set alternately under and over one or more threads of the other set as shown at Fig. 19.

Lace braid consists of an irregularly braided fabric, as shown in Figs. 28 to 36. (These illustrations will appear in a future issue.)

The art of braiding by hand dates from the earliest times, the earliest practice undoubtedly having been the braiding of the hair. It was one of the arts of the American aborigines, examples of braided work having been found in the tombs of the Peruvians. The mechanical production of braid is of comparatively recent origin. The first braid machines were invented in Barmen, Germany, in 1750 for the manufacture of cord or shoe laces. As the first machines were used to make string the word "riemen" (string or cord) is still applied to many parts of the braid machines and the processes of braiding, although the process has long since been used in the production of a wide variety of goods. Soon after the invention of the braid machine it was introduced into Saxony, Alsace, France, England and America. Barmen, however, has retained the lead in the manufacture of braided goods and today the Barmen braid machines occupy the front rank. The best proof of the superiority of the Barmen braid machines is found in the fact that they are now in extensive use in all parts of the world even where competing machines are built. The Barmen machines are durable, occupy very little space, and are much easier to operate than the other types, whether in the production of fine braided laces or in the making of cable the size of a man's arm. All braid machines are built on the same basic principles and because of the superiority of the Barmen machines we will refer only to them for illustrating our account of the braiding process.

The mechanical operation in general is as follows: The yarn is wound on spools; the threads are drawn to a central point, the so-called braiding point. The spools are divided into two sets, one running to the right and the other to the left in an undulating path by which each thread is carried alternately under and over one or more threads of the opposite set. As fast as the threads are formed into braid it is drawn upward between friction rolls and wound on a roller; thus each thread is drawn in two directions, zigzagging from one side of the braid to the other, and lengthways as the braid is wound.

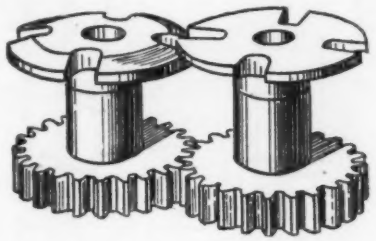


FIG. 1.

The Barmen braid machine consists of two wrought iron plates, three-eighths of an inch thick, set parallel to each other about 3 1/2 inches apart and held in place by bolts. The lower plate serves as a foundation for the whole machine and carries the conical spindles around which so-called wing wheels turn. These wing wheels give the spools the desired undulating motion. They differ

from the ordinary gear in that the upper end of the stud carries a plate in the circumference of which are cut a number of notches. These wing wheels derive their name from the shape of the part left between the notches as shown in Fig. 1. On the upper part of the machine concentric with the wing wheel are cut grooves forming a plate over each wing wheel. The spool carriers move in these grooves. A pin projects from the bottom of the carrier through the upper plate. As long as this pin is held in adjacent

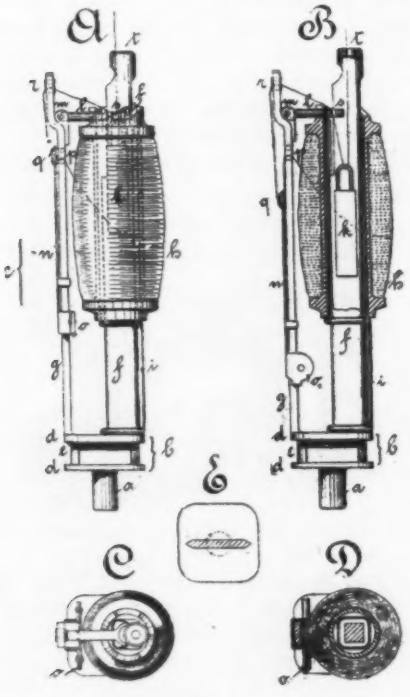


FIG. 2.

notches of two wing wheels it is carried along the groove and is delivered in turn to the next pair of wing wheels as soon as the notches in which it is held are separated by the revolutions of the preceding pair of wheels.

The spindle is the most important part of the braid machine and efforts are continually made to perfect it, which accounts for the numerous patents issued for improvements in braiding spindles. The object of the spindle may be stated as follows:

1. To carry the spool on which the braiding material is wound.

2. To provide for a regular tension on the yarn.

3. To permit a regular let-off and delivery of the yarn.

4. To provide for stopping the machine when the threads break.

There are two kinds of spindles, one on which the spool is held in perpendicular position and the other in which it is held horizontally. The perpendicular spindles are in turn

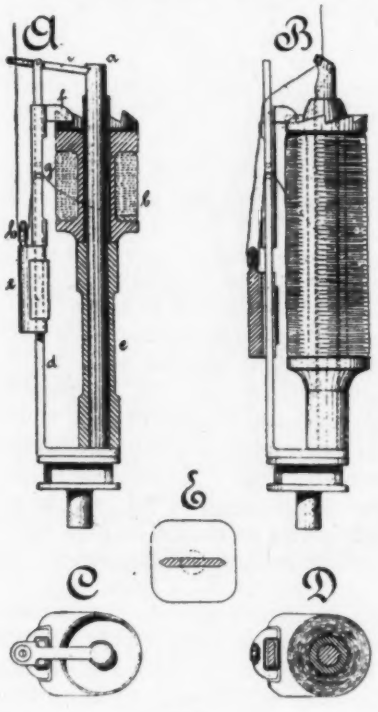


FIG. 3.

divided into two classes, those with an interior weight, Fig. 2, and those with an exterior weight. The spindle with the interior weight is generally used and consists of three parts: the pin, a; the base, b; and the upper part, c. The bottom of the pin, a, as has already been explained, transfers the motion of the wing wheel to the bobbin. The base, b, consists of two plates, dd, the distance between them corresponding to the thickness of the upper plate. The upper part, c, is riveted, soldered, or screwed to the plate, b.

The upper part, c, consists of a tube, f, and a so-called feather, g. The spool rests on a wire support, i, and must turn easily on the tube. Inside the tube, f, is the weight, k, which holds the thread under tension. At the upper end of the weight, g, is a latch, l, swinging on the axis, m, and resting between the teeth in the head of the spool. On the feather, g, slides an off-set, n, at the lower end of which is the large plate, o, and the screw o'. The thread as used is drawn from the spool, h, through the eye, p, in the feather; through the guide, g, in the off-set, then

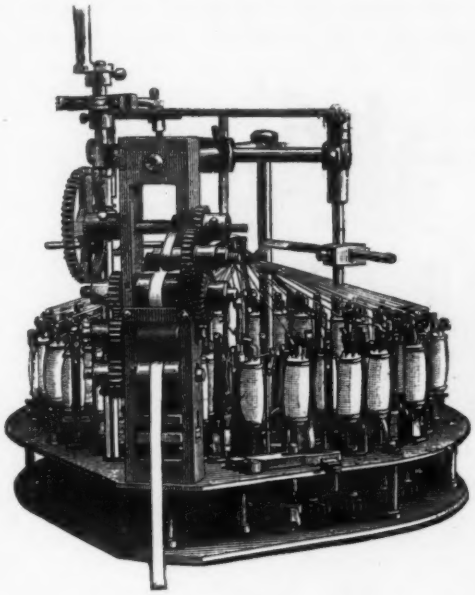


FIG. 4.

through a second eye, r, in the feather, g; then through the eye, s, in the latch, c; and then through the tube, f.

At this point the weight, k, is hung on the thread, which is carried upward through the eye, t, to the braiding point. The latch, l, prevents an irregular delivery of the thread from the spool. This latch remains stationary between the teeth of the spool until the surplus yarn in the tube, f, is used. When this occurs the weight, k, has reached its highest point and pushes the latch from the teeth of the spool, which is then free to turn delivering a certain quantity of yarn and causing the weight to fall and the latch to connect again with the teeth of the spool, holding it stationary. When a thread breaks or all the yarn is drawn from a spool the stop motion, n, falls down and by means of a wider part, oo', strikes the lever which is connected with the twisting mechanism of the machine, bringing the machine to a standstill.

On large machines a number of levers are connected with each other. Fig. 3 shows a solid spindle, a, in place of the tube, and

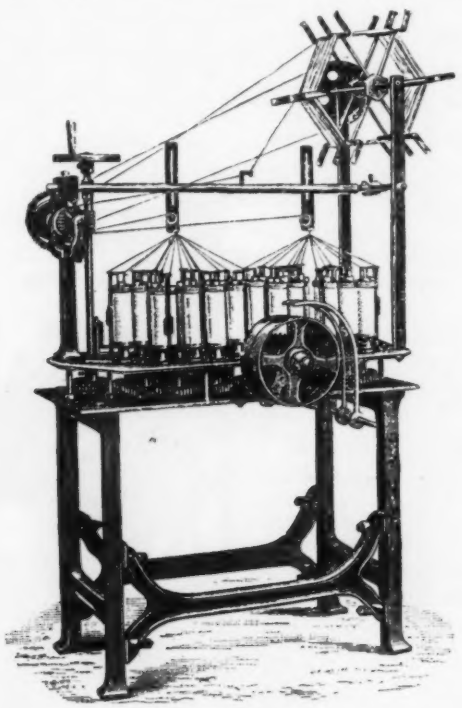


FIG. 5.

on which the spool, b, is placed. The weight, e, slides on the feather, d; the catch, f, prevents the yarn from being delivered too fast. The weight is guided over the spool through the eye, g, in the feather, d, then through the eye, h, of the weight and next to the eye of the lever, i, and finally to the braiding point. As the braiding proceeds the weight rises and finally displaces the catch, f, allowing a new spool of yarn to be delivered. If a thread breaks or runs out the weight falls and stops the machine by a suitable mechanism.

Horizontal spindles are seldom used because of the greater expense and larger floor space required for the machine. They are used when it is desired to reduce the friction on the thread to a mimimum. Besides the spindle the take-up motion deserves special attention. The strand is wound automatically in most cases by being drawn over three rollers as shown at Fig. 4. In some cases a part is passed over one roll, the surface of which is covered to produce friction, Fig. 5. The kind of take-up used depends on whether it is desired to have the goods pressed or not. When the take-up shown at Fig. 4 is used the braid is delivered from press rolls to a suitable receptacle. When the single take-up roll, Fig. 5, is used the braid is wound on a reel as shown. The density or weight of the braid depends on the speed of the take-up; the faster the speed the more loosely are the threads braided; by reducing the speed a closer fabric is produced. Small braiding machines are generally built with 2, 3 or 4, occasionally more, machines in one head. This arrangement reduces the space required and also the cost of the machines, as the driving, take-up and stop motions can be combined for all the connecting machines; there is of course the disadvantage that several machines must be stopped together. Fig. 5 shows a two-head machine; Fig. 6 shows two machines on a short table.

(To be continued.)

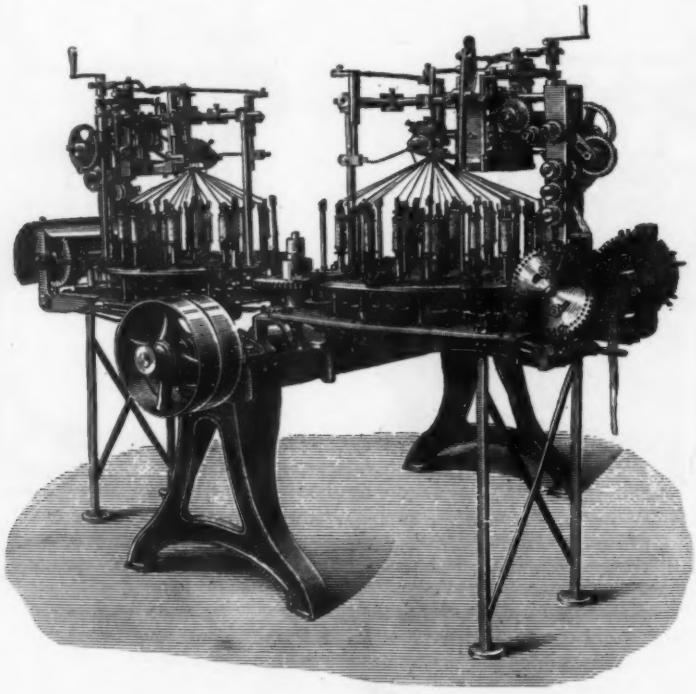


FIG. 6.

KEEPING TRACK OF WORK IN THE CUTTING AND FINISHING ROOMS.

BY WABASH.

To be up to date a manufacturer of underwear must make what is called "regulars," which are supposed to fit the average man; also "stouts" for the short, stout man, and "slims" for the extra tall man. All these goods are cut from the same roll of cloth. Starting at the cutting table the cutter should put up the shirts in dozens with sleeves of the correct size to match and tie them all tightly together with a string on which is a check denoting the style and size of the garments. They are then given to the garment marker, who should mark them with

a stout thread, using different colors for different styles. For regulars these marks are:

SHIRTS.

32	34	36	38	40	42	44	46	48
I	II	III	IIII	X	XI	XII	XIII	XIIII

DRAWERS.

28	30	32	34	36	38	40	42	44
I	II	III	IIII	X	XI	XII	XIII	XIIII

To designate "stouts" take size 40 shirts and make the mark $\overline{X}$, or a mark crossways over the top of the regular mark. For "slims" make the mark under the regular mark: $\underline{X}$.

As it is sometimes necessary to put through at the same time different grades of goods of the same shade the tie strings should be of different colors. It is best to have them of the same color as the marking thread. The marker should tie each dozen separately before beginning on another dozen to avoid the danger of mixing sizes.

The goods are now ready for looping on the cuffs and in order to avoid putting on the wrong cuffs, which is a source of much trouble in some mills, all the cuffs should be put up in dozens and tied with strings to denote the style. The looper should also tie up the dozen as soon as finished to avoid the possible mixing of goods or strings.

The goods are now ready for the inspector and mender. These operations should be carried out on one dozen at a time and each dozen tied up before another is started. In seaming, the next process, the same care should be observed to tie each dozen with the string belonging to it.

The goods are now ready for washing and fulling. As it is almost impossible to wash sizes separately great care is needed here to avoid getting the goods on the wrong boards after washing. The best plan is to have a long sorting table, long enough to give room for a small section for each size. Have the size marks on both the front and back of the table. The goods are taken to this table after being extracted and all of one batch is sorted before they are put on the boards. All the boards should be marked at the bottom on both sides so as to get the goods even in length. When they are dry and ready to come off the boards they should be laid in separate piles and tied in dozens, care being taken to get the right strings according to the size and style.

The goods are then taken to the finishing room, where the next operations are turning and neck cutting. This should be done in the same manner as the preceding operations, that is, one dozen at a time, and the same strings tied on again. The finisher, the buttonholer, the button sewer and buttoner should proceed in the same way. Of course in most of these operations a number of dozens can be taken to the machine at one time, but only one dozen should be untied. After the goods are buttoned they are ready for the final inspection and the press. The check that goes along with the goods is arranged so that every operator cuts off a coupon for his own use and as a record of the number of dozens done. The operators are also numbered and they put their numbers opposite the name of the operation printed on the check. These checks can be bought from any mill supply house.

If the goods are put through in this way any bad work can be located at once and the blame put where it belongs.

THE MANAGEMENT OF HELP IN A KNITTING MILL.

BY DAN BUCKLIN.

One of the most important things in the successful management of a knitting department is ability to control the help. For various reasons it is harder to control operatives in this department than in any other, chief of which is that they are generally younger. The foreman must be a man of great patience. It is essential for the success of any department that there should be a good man at the head, but this is especially true of the knitting department. A foreman of knitting must be not only a practical knitter, but know how to manage the help. Another fact bearing on this question is that it takes from three to six months for a girl to learn the work and after she has become expert at it it is poor policy to discharge her for breaking some of the rules and be obliged to get a new girl in her place. Every time the foreman discharges a skilled operator he knows that it will take from three to six

months to replace her and that the production of his department will be cut down for the same length of time. The operators know this also, and know they will not be discharged for any slight offense, and for this reason they are apt to take greater liberties than the help in other departments, who know if they are discharged the foreman can fill their places at once.

The foreman must learn to adjust himself to the conditions under which he is working. He cannot use the same policy when help is scarce as when the supply is plentiful. Under the present conditions there are certain things that a foreman must overlook and a very good rule to follow is to try to overlook the faults of the good operators and make examples of the poorer ones. But it does not do to give even the best help too much liberty. There is a certain place to draw the line and the man who knows just where that place is will be a success. Sometimes a foreman makes the great mistake of trying to let everyone know how much authority he has; while if he really has any great amount of authority the help will find it out without his trying to find opportunities to display it. Some foremen seem to think that every time they pass down an aisle it is necessary to give somebody a call down. This is one of the greatest mistakes a man can make. It makes him unpopular with the help; they lose confidence in him, and they soon get so used to being found fault with that they don't pay any attention to it. In the end he loses the respect of the operatives and when that happens the best thing he can do is to resign before being asked to do so. I know of more than one instance where the help simply refused to work until the foreman was discharged. I have found from actual experience that the boss who can run his department with the least amount of bossing is the boss who is a success.

The foreman should be very careful about making promises that he cannot fulfill, particularly in regard to prices. In most mills there is considerable difference in prices paid for the same operation on different styles or gauges of work. For instance, goods that are paying a good margin of profit will stand a better price than those that pay the stockholders little or nothing. Generally speaking, it is necessary to pay better prices for fine work than for coarse work. The finer the gauge, the higher the price and the operators can also earn considerably more on fine work than on coarse work. This is sure to cause dissatisfaction among the help and the dissatisfied ones are continually asking for a better place. Here is where good judgment on the part of the foreman is necessary. If he is looking out for the interests of the company he must keep the best operators on the higher priced work and the poorer operatives on the cheaper work. He should be thoroughly familiar with the ability of each operator and when a girl asks for a better place, if he knows she deserves it he should promise to give it to her at the first opportunity and then not forget to do so. On the other hand if she has not the ability for the better place he should tell her as plainly and as pleasantly as possible and at the same time encourage her to do better work so that she may be advanced later. It should be the purpose of every foreman to encourage and advance his help in every way possible.

It is an excellent plan to start the new help on coarse work and advance them as fast as they prove capable of doing a better class of work. This makes it an object to them to try to improve if they know a better place awaits them as soon as they can show themselves capable of filling it; in this way the most deserving help always have the best work. The conclusion from all this is that the proper way to manage help in a knitting room is for the foreman to treat each one as he would like to be treated if he were one of them.

Market Price of Balbriggans.

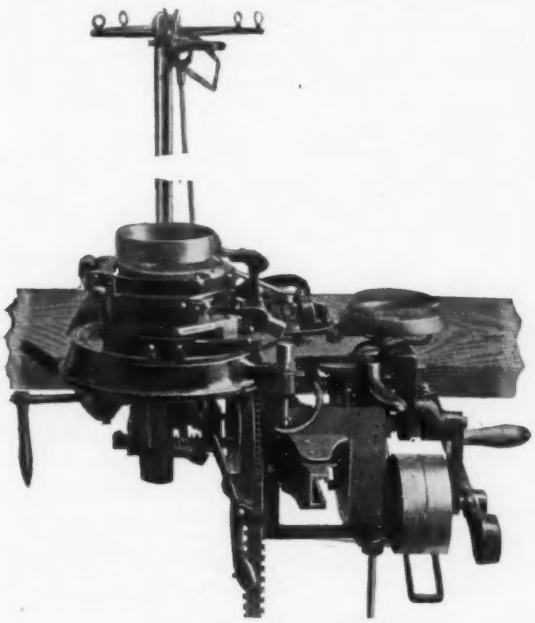
Editor Textile World Record:

What would a manufacturer get for an all wool combed balbriggan weighing 3 1/2 pounds a dozen and retailing at 50 cents? Stearns (792).

Balbriggans of the grade mentioned could have been bought in July and August last for delivery in the spring of 1907 at $3.62 1/2, 6 per cent. off, 10 days, May 1 dating, but at present are worth $3.75 to $3.87 1/2. Fillmore.

THE NEW BOSS HIGH SPEED KNITTING MACHINE.

Many thousands of the Boss high speed knitting machines are in operation in successful American mills. One of the leading features of this machine is that the operator handles only the transfer device and not the cylinder. This effects a great saving. The new device keeps the work at a uniform tension and saves a lot of wear and repairs to the machine. It is said that one good machine fixer can attend from 100 to 150 of the Boss machines without difficulty. One operator can attend from two to three machines on half hose and for footing ribbed goods. Fifteen to 20 machines are run by one operator on ladies' plain hose.



THE BOSS KNITTING MACHINE.

The Boss machine can be run at a speed of 290 to 325 r. p. m. with a minimum of needle breakage and menders. All press-offs and pieces of stockings can be knit into perfect stockings, saving a great amount of waste. It is said that one machine will make from five to ten dozen a day, according to gauge.

The machine can be seen in operation at the Boss Knitting Machine Works, Reading, Pa. Full particulars will be furnished upon application.

Stamping Ink.

Editor Textile World Record:

In your October issue you gave a recipe for stamping ink for marking fast black hosiery. This is one that I have used with success:

Dissolve 10 ounces gum arabic in hot water until thick.

Dissolve 8 lbs. zinc oxide in 4 pints of cold water.

Mix thoroughly and add 4 ounces of glycerine.

Adams.

Black on Knit Goods.

Editor Textile World Record:

I enclose three samples of dyed knit goods and wish you would let me know which is the best dye. Do you think the formula given in your February issue would give better results than these samples show? Bannister (780).

As to the first question, the sample marked No. 3 is the one I should prefer, but as it was dyed on a finer rib than the others that may have had something to do with its appearance. However, I would remind "Bannister" that what I think about these samples is of no importance whatever. When I am dyeing a certain color or shade it is not for me to say which color is best or which shade will sell best. That is something our selling house determines and as they are meeting the buyers and know just what the trade wants, it is up to the dyer and the mill manager to give them what they want, regardless of personal opinions in the matter.

The second question is harder to answer as I do not know the formula used for the samples submitted. Again practical experience and good judgment are needed to dye aniline black on hosiery and an inexperienced man may have considerable trouble working a formula with which he is not familiar, as dyeing cannot be successfully done by printed formulas alone. Assuming that "Bannister" is a competent dyer I would like to ask why he has not answered his own question before this time and tried the formula in question in his own dyehouse? Good results with any formula can be obtained only by much work and experiment, and even then what is a success with one man is a failure with another. The formula given in the February issue is a good working formula and has been used for years in a large hosiery

concern with success, but it may be no better or worse than some other. It seems to me the best thing to do is to try it, but whether the results will be better or worse only the selling house can decide. Baumwolle.

Yarn for All Wool Socks.

Editor Textile World Record:

We want to make a pure woolen sock weighing from two to three pounds, and would like to know whether twisted or single yarns will be best. We would like to have details about washing and scouring, pressing, etc. Strumpf (772).

As I have no sample of the goods to be matched it is rather hard to say what yarn would be best for the all wool hose, but it is my opinion that a single yarn, if not spun too hard, is much the best, as the goods require to be fulled and a single soft spun yarn makes a hose 25 per cent. better than a two-ply yarn. The hose made from single yarn fulls quicker and feels softer and more lofty than a two-ply hose of the same grade and weight, but the single yarn hose will not wear as well as the other.

Regarding the machinery, a laundry washer is all right for both scouring and fulling. Some woolen goods are first scoured then the liquor is run off and four buckets of water at 160° F., and about 5 pounds of fig soap previously dissolved, are added for each hundred pounds of the goods. It may take a little more or less soap according to conditions. In some cases it is necessary to have a fulling machine of the hammer type. The goods are then rinsed in warm water to remove the greater part of the soap and then in cold water. If a plentiful supply of water is available a rinse box similar to that used for washing wool by hand is the best for rinsing in cold water. This rinse box should have a perforated copper bottom, curved to the top at one end. The goods are next extracted, the machine being placed near the washer and rinse box.

If the goods are to be bleached there should be a hot water tank placed above the washer with means provided for regulating the temperature so that plenty of hot water may be available at all times.

The processes of finishing woolen, worsted or merino hose are as follows: Scour and full the goods wrong side out. This gives a more even face. After the goods are fulled and scoured they are spread on a wire cloth dryer such as is used for drying wool. When dried they are run through a fleecing machine once or twice. The right side is then turned out and the goods placed in a steamer and steamed for about five minutes, after which they are boarded and dried at a moderate temperature. When dried they are brushed before being taken from the boards after which they are paired and folded ready for shipment. If pressed at all it should be done cold. I prefer not to press woolen goods. If the goods are not fleeced they should be fulled on the face side, boarded, and brushed in the usual way.

H. W. Crowe.

Undoubtedly a twisted yarn gives the best results. A great many mills run two bobbins at a time, letting the machine do the twisting, but for a cheaper line use only the single end. In our mill it is the practice to have the yarn dyed before knitting as dyeing in the piece has a tendency to mat the goods and they do not have the same brightness or elasticity as when using dyed yarn. After being looped and mended they are boarded and pressed in a steam press, care being taken not to have the press too hot. If it is too hot the goods are likely to curl at the toes when removed from the boards. It is better to leave them on the boards until perfectly cold.

Sioux.

Marketing Men's Wear Goods.

Editor Textile World Record:

Kindly inform me as to the conditions (terms and discount) under which men's wear goods are sold, both high and low grade. Cotton (789).

The terms on which heavy woolens are sold date July 1, some on 7 per cent. four months, and some 10 per cent. 30 days. Goods to be delivered in April, May and June, with some in July or later, on above terms; no dating ahead. Spring goods are sold on the same terms, except that they date from January 1. Sample pieces of heavy goods to be delivered in February and March and a few in April, all dated July 1. Yantico.

Recent Knitting Patents.

KNITTING MACHINE Stitch Transferring Device. 836,058. John Vaughan, Philadelphia, Pa.

KNITTING MACHINE. 838,065. William C. Whitcomb, Chicago, Ill., assignor to George C. Whitcomb Co.

KNITTING MACHINE Stop Device. Circular. 836,691. Ernest Ludwig, Manitowoc, Wis.

KNITTING MILL NEWS.

KNIT.

New Mills.

*New York, Clinton. The Clinton Knitting Company, recently incorporated with capital stock of $30,000, expect to start operations in their new

plant about Jan. 1st. They will make children's underwear. H. W. Roberts is president of the company; E. B. Stanley, treasurer and Ambrose Louer, superintendent. Plant will be operated by steam. Goods will be sold direct.

*New York, Frankfort. The Duofold Health Underwear Co. has secured the plant formerly operated by the Mohawk Valley Woolen Co. and will equip same for manufacturing underwear. The company is incorporated with capital stock of $100,000; D. Clinton Murray, president; Charles B. Rogers, vice-president and Beecher M. Crouse, secretary and treasurer.

*New York, Utica. The Augusta Knitting Co. has been incorporated with capital stock of $10,000. This company has been organized to operate the plant to be started by M. F. and E. W. Robischon.

North Carolina, Hoffman. G. C. Baldwin is operating a plant at this place manufacturing seamless hosiery.

North Carolina, Tarboro. The Wah-Ree Hosiery Co., capitalized at $40,000, will start operations Jan. 1st, making women's hosiery. Their mill will be equipped with 70 latch needle and 4 sewing machines and finishing plant. Henry A. Gilliam is president of the company; Geo. Howard, treasurer and C. W. Jeffreys, general manager.

North Carolina, Tarboro. The Tarboro Knitting Mills, Inc., capital stock $20,000, have started a new plant, making women's hosiery. The mill is equipped with 84 knitting and 6 sewing machines, and run by steam. Job Cobb is president of the company, W. S. Howard, treasurer and C. W. Jeffreys, general manager. Goods are finished at the mill.

*Nova Scotia, Glace Bay. The Glace Bay Knitting Co., Ltd., has been incorporated with capital stock of $10,000 and has started a plant at this place, making chiefly socks and hosiery. Plant is equipped with one set cards and 6 knitting machines. Stuart McCawley and John C. Vangler are the directors of the company and F. A. Ferguson, superintendent.

Pennsylvania, Dorrancetown. The Werkheiser Knitting Mills is a plant which has been running here for some time, making fine seamless half hose. Equipment consists of 6 latch needle knitting machines and 2 loopers. B. C. Werkheiser is proprietor of the plant.

*Pennsylvania, Fritztown. Operations will start January 1st in new mill established here by Wm. G. Leininger, making men's half hose. Plant, which will be equipped with 36 knitting machines, will be a branch of the main mill at Mohnton.

Pennsylvania, Lyons Station. A new mill is being erected on site formerly occupied by the American Knitting Mills (burned) and will be operated by Kutz, Kiefer & Kutz. They expect to have the plant in operation by January 1st and have already purchased 30 full automatic machines, also ribbers and loopers. Plant will be run by steam. Product will be finished at the mill.

Pennsylvania, Norristown. Robert E. Boyle, late of the DeKalb Knitting Mills, in conjunction with other parties from Phoenixville, are installing machinery in the Woodstock Mills, for the purpose of manufacturing men's, women's and children's hose and half hose of cotton and lisle. The plant when first started will contain 35 knitters and 3 loopers and will use 16s to 50s carded and combed peeler and 36s to 50s Egyptian yarns. It is also the intention of the company to put up a dye house within the next six months and also add enough knitters to bring the number up to 150. The name of the company will be the Phoenix Knitting Co., and will be incorporated.

Pennsylvania, Schuylkill Haven. R. J. Hoffman, formerly with the Eureka Knitting Co., will start operations January 1st in the Weiss factory building, which has been purchased and remodeled, making ladies' underwear. The plant will be equipped with ten knitting and ten sewing machines and operated by steam.

Tennessee, Maryville. The Maryville Knitting Works has been organized to operate a plant which will start with about 50 operatives. They will utilize the building formerly operated by R. H. Hanna. J. H. Price, R. H. Hanna and Mr. Deabill are interested in the new project.

*Wisconsin, Hartford. It is reported that the Alberta Mills is name under which a new company proposes operating a knitting plant. Expect to have same running in the spring.

*Wisconsin, Milwaukee. The Edward Fisher Co., capitalized at $25,000, has started a new plant at this place, making fancy knit goods. Edward Fisher is president of the company and A. Rosenberg, superintendent. Product is sold direct.

Enlargements and Improvements.

Alabama, Athens. The Athens Hosiery Mills plant has been removed from this place to Trenton, Tenn., where the same name will be retained.

Canada, Quebec. The Waterloo Knitting Mills propose enlarging the plant in the spring and will build an addition 200 by 70 feet, 3 stories, brick.

Canada, Winnipeg. The Hudson Bay Knitting Co. is considering the question of installing a small spinning plant to make wool yarns for the knitting trade.

Connecticut, Manchester Green. The Glastonbury Knitting Company contemplates building an addition in the spring.

*Connecticut, Windsor Locks. The enlargement which the Medlicott Co. is building to their plant is for the finishing department.

Massachusetts, Pittsfield. An addition is to be built to the Pittsfield Steam Power Co.'s building for the Musgrove Knitting Company's use.

Michigan, Adrian. Repairs and changes are to be made in the Adrian Knitting Co.'s mill.

*Michigan, Bay City. The World's Star Knitting Works have started operations in their new mill.

*Michigan, Port Huron. Work is well under way on erection of the new mill for J. L. Fead & Son. They will install a new and complete plant for manufacturing yarns and are to locate the entire plant at this place. Will discontinue operations at Lexington.

New York, Amsterdam. The Atlas Knitting Co. has closed the carding, spinning and knitting departments of the mill for purpose of making extensive repairs to the plant and resetting the boiler. Operations will be resumed January 2d.

*New York, Cohoes. The Roff Underwear Company, reported making repairs to the Atlantic Mills, is installing considerable machinery in the finishing room. The cutting and napping departments have been transferred to the Green Island plant. The company's New York office is now at 346 Broadway, in charge of Fred Roff.

*New York, Earlville. The branch mill to be established here by the Lewis Knitting Company, of Sauquoit, will be put in operation about March. Will install 30 knitting machines and 50 sewing machines in the plant.

New York, Jersey City. The Foot Manufacturing Co. is building an addition to the plant, which will almost double present capacity.

New York, Mechanicville. The Union Knitting Mill is making a change in some of the machinery. The old 24-gauge cylinders are being replaced by new 20-gauge cylinders. The plant will continue in operation during the change.

New York, Valatie. The Valatie Knitting Company has increased the capital stock from $40,000 to $60,000.

North Carolina, Winston-Salem. The P. H. Hanes Knitting Co. is to erect a new mill opposite the present plant and will connect both mills with an overhead steel bridge. Work will start early in the spring on the new plant, which will be 100 by 75 feet, 4 stories.

Pennsylvania, Grill. H. Y. Yocum purchased the business of the Quality Knitting Mills Co., 15 S. Front St., Reading, Pa., and will operate this plant as a branch of the main mill at Grill.

*Pennsylvania, Kutztown. Work has been started on the three-story addition, 32 by 65 feet, to H. K. Deisher's mill. The new addition will be for additional finishing room and one floor for stock. Operations are expected to start about Jan. 15th in new addition. This plant is run on cotton and mercerized ribbed underwear.

Pennsylvania, Reading. The Reading Knitting Mills, Leippe & Davies, proprietors, have placed an order for 65 additional knitting machines to be installed.

Pennsylvania, Reading. The Hampden Knitting Mills Co. have added 30 embroidering machines and new 125 horse power boiler and will put in a 100 horse power engine some time during the coming year.

Pennsylvania, Reading. The Reading Glove & Mitten Manufacturing Co., 940-948 Spruce St., are putting in a new 35 horse power engine and 60 horse power boiler and have also increased their machinery doubling their capacity. August Granz, the superintendent, who has been with them for only two years has made great improvements since his employment by the company. A dividend of 12 per cent. was declared last year and a surplus is on hand out of the profits which will enable them to pay for the proposed improvements.

Pennsylvania, Reading. S. S. Miller is running a hosiery mill full time as there is a large demand for the goods which he manufactures. He will shortly increase the capacity of the plant to 1,500 dozen per week, the production now being 1,000.

*Pennsylvania, Reading. E. Richard Meinig & Co., manufacturers of silk gloves at Douglas and Moss Sts., will soon remove their business to their new four-story brick mill, 210 by 50 feet, on McKnight St. They expect to be in the new building early in the coming year.

Pennsylvania, South Bethlehem. The Austin Knitting Co., manufacturers of seamless half hose on 44 knitters, 14 ribbers and 12 loopers is very busy. The company has recently changed its superintendent, J. H. Lecony, formerly with Wm. T. Taubet of Riverside, N. J., and the Argood Hosiery Co., of Riverton, N. J., now occupying that position. The plant will be greatly increased during the coming year to meet the demand for their goods.

Pennsylvania, Temple. The Maiden Creek Hosiery Co., which has been operating two mills, one at Maiden Creek and one at Temple, has removed the entire plant to this place.

*Pennsylvania, York. The York Knitting Mills, operated on seamless half hose, also ladies' and misses' hosiery, are installing 100 full automatic knitting machines.

Utah, Lehi. The Standard Knitting Factory will install additional machinery early next year.

*Vermont, St. Johnsbury. The branch mill to be established here by G. H. Tilton & Son (Tilton, N. H.), will be equipped for seaming children's cotton hose. Knitting machines will soon be installed.

Wisconsin, La Crosse. The La Crosse Knitting Works have absorbed the plant of the Bouton & Germaine Company, at Ripon, manufacturers of leather gloves and other articles made from leather. The machinery, etc., will be removed to this place and active operations in the new department started January 1st.

Wisconsin, Manitowoc. It is reported that the Manitowoc Knitting Mills propose increasing their plant next year.

Mills Starting Up.

*California, Berkeley. The J. J. Pfister Knitting Company is operating part of their newly built plant at West Berkeley. They will have a total equipment of 36 flat and 10 latch needle knitting machines, using electric power.

Pennsylvania, Allentown. The Lehigh Knitting Mills, 722 Linden St., whose plant has been shut down for the past four months, is again in operation, with a new superintendent, V. O. Schuler. The production of the mill has been changed and in the future they will make Swiss ribbed vests for women, operating 15 knitters and 10 sewing machines and using 20s and 24s cotton yarns. Sell product through Critten Clift & Co., N. Y.

*New York, St. Johnsville. Operations will be started in George D. Snell's hosiery mill about January 1st.

Mills Shutting Down.

Massachusetts, Lowell. Greenwood & Payton's mill has been closed. Operations will not be resumed.

New Jersey, Burlington. T. P. Eltonhead's knitting mill located on Pearl St., which has been shut down for some time will be sold out at public auction of December 18th. The plant contains 50 knitting and 48 sewing machines which were operated on women's knit underwear, women's hosiery and men's half hose.

New Jersey, New Brunswick. The full fashioned underwear mill, operated by Alfred March & Co., at 154 Hamilton St., is to be shut down January 1st, the company to discontinue business. The equipment will be offered for sale. This plant is equipped with 4 spring and 12 latch needle knitting machines and 14 sewing machines.

Pennsylvania, Bethlehem. The Hanover Manufacturing Company, manufacturers of boys' heavy ribbed hose, have shut down their plant and will not start it up again, their intention being to give up the business. R. J. Ott, the treasurer, states that the concern is negotiating with parties from Philadelphia as a possible purchaser and who, if they decide to take the plant over, will start it up again. The mill contains 65 latch knitting machines, which were operated by electricity. J. T. Shimer held position of superintendent and buyer.

Pennsylvania, Schuylkill Haven. The Eureka Knitting Co., Ltd., has gone out of business. The plant was recently destroyed by fire.

Wisconsin, West Bend. The West Bend Knitting Mills have discontinued business.

Facts and Gossip.

*Connecticut, Bridgeport. D. P. Mills is president of the W. S. Mills Co., which has been incorporated recently to continue the plant of W. S. Mills, who holds position of treasurer in the new company. Business will be continued on the same principles as heretofore.

*Connecticut, New Haven. The Whiteknit Mills Company has been incorporated with capital stock of $20,000, to continue plant started by Leroy E. Whiting. Frank I. Hall is president of the company, Harvey E. Hull, treasurer and L. E. Whiting, secretary.

*Maine, North Brooksville. We have been advised by Grace M. Limeburner that the proposed knitting plant has not yet been started. At present about 50 people are employed knitting by hand fishermen's mittens, double mittens, stockings, etc.

*Missouri, St. Louis. Harrison Matson, reported some time ago as interested in establishing a knitting mill at this place, has abandoned the project for the present.

New Jersey, Delanco. The Star Knitting Mills of which C. E. Barnitz is the proprietor, is working full time on women's seamless cotton hosiery. The plant now contains 10 knitters and it is the intention of Mr. Barnitz, if orders continue as at present, to greatly increase the size of the plant. He sells direct.

New Jersey, Haddonfield. The Estaugh Knitting Mills Co., manufacturers of ladies' vests, whose knitting department has been shut down for about ten days, report that they will be in full operation again by the middle of December.

New Jersey, Riverton. The Argood Hosiery Co., who removed their business, right after its incorporation last summer, from Philadelphia are again removing to that city and it is said, will start up their plant in the Kensington district. They manufacture and finish women's and infants' cotton hosiery operating 25 knitters. Sell through New York.

New York, Schenectady. It is reported that John S. Maxwell (District Attorney), is interested in a project for establishing a new knitting mill in one of the following places: Utica, Schenectady and Philadelphia. Chas. T. Maxwell (of the Wilton Hygiene Knitting Co., Philadelphia), is also interested.

Pennsylvania, Allentown. The Swissonia Knitting Mills, 28 and 32 North Fountain St., formerly owned by J. J. Taylor & Co., has been incorporated with a capital of $12,000 and H. M. Taylor, president and J. J. Taylor, secretary and treasurer. They are very busy operating 18 knitters, 3 sleevers and 30 sewing machines on ladies' cotton and lisle ribbed underwear and union suits, which they sell through W. J. O'Donnell, 377 Broadway, N. Y.

Pennsylvania, Bethlehem. The Philadelphia Hosiery Company, Scott Ave. and West St., are very busy on misses' cotton ribbed hosiery, operating 65 knitters. The company has a capital of $10,000 and the following officers: President, Chas. F. Hendricks (Philadelphia); treasurer, Samuel Graham and superintendent, Cornelius King, The production is sold through Parks & Muckle, N. Y. Mr. Graham buys for the plant.

Pennsylvania, Clifton Heights. The Columbus Knitting Mills, manufacturers of women's, misses' and infants' hosiery, seamless and full fashioned, are very busy and have recently increased the capacity of the plant in all departments. Have capital of $75,000, and sell direct.

*Pennsylvania, Newville. We have been advised by the Newville Knitting Co. that they are seeking location of a branch plant at Harrisburg and may start there about Feb. 1st. This will be a branch mill.

Pennsylvania, Philadelphia. The Oxford Hosiery Mills operate a plant of 20 knitters, 6 ribbers and 3 loopers on half hose with John Duemmler as superintendent. The main office of the company is located at 505-506 Lippincott Bldg.

Pennsylvania, Pottstown. The Manatawney Knitting Mills, located at York and Walnut Sts., are very busy on their line of cotton half hose. C. S. Gottshalk is the superintendent of this mill.

Pennsylvania, Reading. The Berkshire Knitting Mills are extremely busy and report that their production is sold up for the entire year of 1907.

Pennsylvania, Reading. William G. Schucker, 239 Walnut St., has purchased the business of the late James K. Kauffman and will continue to manufacture the same line of cotton half hose and is meeting with fair success.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Wax for Hosiery Boards. The Purine Manufacturing Co., Reading, Pa., are putting on the market a liquid wax for hosiery boards under the trade-mark name of "Eze" wax. They claim it not only saves the boards from wear and tear, but saves the operators some labor.

Method of Burning Pulverized Fuel. The International Combustion Co., Buffalo, N. Y., are introducing into textile mills the "Packard" system of burning pulverized fuel, which has been so successfully used in other industries. The coal is dried and powdered to 60 to 80 mesh, larger particles being carefully excluded. For smaller plants and locomotives this is done at centrally located grinding stations. Large stationary plants do their own grinding. The coal is conveyed to steel hoppers in front of the boilers. Attached to the bottom of this coal hopper is located the coal feeder, which is driven by the blower engine. The simplicity of the whole device, its ease of regulation, economy on all ordinary loads, and capacity for very great overload, are important advantages.

Roller Leather Stripper. Cook & Co., Manchester, England. A roller leather stripper by which the leather is removed without the use of shears or ordinary knife. The cutter on the new device can be adjusted so as to strip different thicknesses of leather without damaging the cloth on the foundation.

Conditioning Apparatus. The Gesellschaft fuer Trockenverfahren, Berlin, Germany, have recently brought out an improved conditioning apparatus, heated by an electric current for use of manufacturers and merchants who are not in a position to avail themselves of the facilities of a regular conditioning house. A description appears in another column.

Napper for Knit Goods. F. Nydegger, Altstatten, Switzerland. A napping device to be attached to circular knitting machines for napping goods during the process of knitting.

Hot Air Dryer. Wm. Whiteley & Sons, Huddersfield, England, have recently brought out a hot air dryer embodying many improvements.

Cloth Examining Machine. J. W. Knowles & Co., Bradford, England. A machine for examining cloth by which the pieces are drawn over a perch and may be examined from either side.

Ring Spindle. J. Nuttall, Swinton, England, has brought out a device for introducing the oil into the holders of self oiling spindles. It consists of a series of funnels fixed in a trough and corresponding to the spindles to be filled. The exact quantity required for each spindle is measured out and poured through the funnel. It is claimed that in this way much waste of oil is prevented.

Top Dyeing Machine. Wegmann & Co., Baden, Switzerland. An improved spool for top dyeing machines. It is said to be easily inserted and removed from the machine and is provided with a self packing apparatus that gives a tight joint, by which all the liquor is forced through the stock.

Waterproofing with Cork. F. W. H. Durant, Bradford, England, is the agent for a recently patented process for coating cloth with cork, which is used as a substitute for rubber. It is said that the use of cork has various advantages over rubber, such as absence of odor, pliability and lightness of weight, though it is not as cheap as rubber. It is also said that the covered cloth can be boiled for an hour or more without injury, thus enabling the goods to be cleaned or otherwise disinfected when desired.

AN IMPROVED TUBING TWISTER.

An important need of the cotton and flax manufacturing industry has been the production of a high-speed tubing twister frame which would produce a perfectly formed and tubed strand in large quantity per spindle for the better classes of work ranging from four-ply 10 yarn to the large strands now required for woven hose, braided cordage, cotton duck and a multitude of other fabrics and products.

To meet this want the Haskell-Dawes Machine Co., 176 Federal St., Boston, Mass., are introducing an improved tubing twister, which is said to be a radical departure from old methods and to embody important improvements in this process.

The defects in the methods heretofore in use are summarized as follows:

"At the present time all twisting is done either by the ring or open flyer system. The ring system is capable of a high speed, but is very much limited by the drag, or take-up friction, as all manufacturers are aware, and this is emphasized as the bobbin becomes nearly full, when an added amount of tension is needed to overcome the great leverage of the larger diameter of the work on the bobbin. Another decided defect lies in the ring and traveler easily wearing out when a heavy tension is required.

"The open flyer system has a slight advantage over the ring system, inasmuch as the tension can be regulated as the bobbin fills, but the efficiency of this tension depends entirely on the intelligence and attention of the operator, while it has a disadvantage over the ring system in the fact that the speed is limited through the flyer legs spreading under high speed.

"Both the ring and the flyer twister systems have two serious defects—first, the absence of any tubing or compressing device, which are absolutely necessary for the production of perfect strands, and second, the slipping of driving bands caused by small spindle whorls.

"Briefly, the defects of both of these systems are as follows: Poor take-up tension on both types; poor work, due to absence of tubes or compressors; poor work, due to slack bands; limited speed of flyer twisters, due to spreading of legs; excessive breakdowns of work, due to poor tension; less amount of work on bobbins, due to light tension; unequal band tensions on spindles."

The new Haskell-Dawes machine designed to overcome these difficulties is built with 20 spindles each (10 to each side), 5 by 7 bobbin, occupying a floor space of 3 feet 3 inches wide by 11 feet long by 4 feet high (without creel), and will run easily at a speed of 2,300 revolutions per minute.

The marked advantages of these twister frames are stated as "positive drive, equal to gearing; positive yet sensitive friction or take-up; producing tubed work with a tube which gives the finish of a solid tube and yet allows knots, splices and other slight defects to pass without breaking down the work; product can be changed from right to left hand twist with little trouble or waste of time; will use a regular bobbin or one with a conical head, the latter being desirable when the product is to be balled, reeled or finished in cops, the product leaving the bobbin as freely as from a cone or tube; will produce work 25 per cent. stronger than if made on a ring twister.

"By actual tests, 5 by 7 bobbin on these twisters will hold four times as much work as the 4 by 7 bobbin on a ring twister. This is due to the strong tension, making a hard bobbin without a knot.

"This work can be put at once on to the beaming creel, saving spooling and knots, and also having the stretch out of the work, which for duck, woven hose or braided work is a very important feature."

It is said a number of important tests have been made in the presence of experts, which have proved conclusively the claims made for this improved high-speed tubing twister in the production of perfect strands.

The new twister is manufacutred by the Haskell-Dawes Machine Co., 176 Federal Street, Boston, Mass., and can be seen at the company's shops, Erie and Trenton Avenues, Frankford Junction, Philadelphia, Pa.

The textile industry of Austria furnishes a livelihood to over 800,000 persons.

HEAD GATE HOISTS.

Our illustrations show three types of head gate hoists built by the Dayton Globe Iron Works Company, Dayton, Ohio, designed to meet the various requirements of small, medium and large size gates. The hoist shown at Fig. 1 is the lightest pattern and intended to use where the gates are small and operated against very low pressure. As the pressure increases owing to the size of the gate and the depth below the level of the water, it is necessary to use a heavier and more substantial mechanism to operate the gate. For very large size gates it is often necessary to use a small gate, which is called a "filler" gate. This is used to pass sufficient water through the gate to fill the flume or boreway, thus partially neutralizing the pressure against the face of the gate. There are cases where this method is impracticable and where it is necessary to design a hoist with sufficient strength to raise the gate under a high pressure. It is also necessary in such cases to use a spur or worm gearing to reduce the power that must be applied to the crank shaft or handwheel, and make it possible for one or two men to operate the gate.

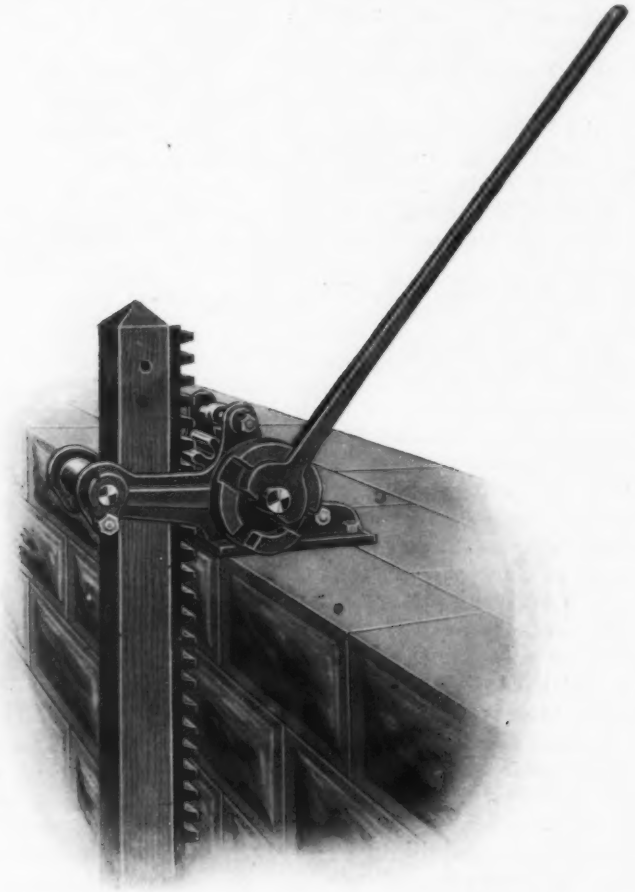


FIG. 1. A SINGLE STEM HEAD GATE HOIST.

Figs. 2 and 3 show gates arranged in this way.

When the gate reaches a width of seven or eight feet it is desirable to use two stems instead of one and for this reason nearly all

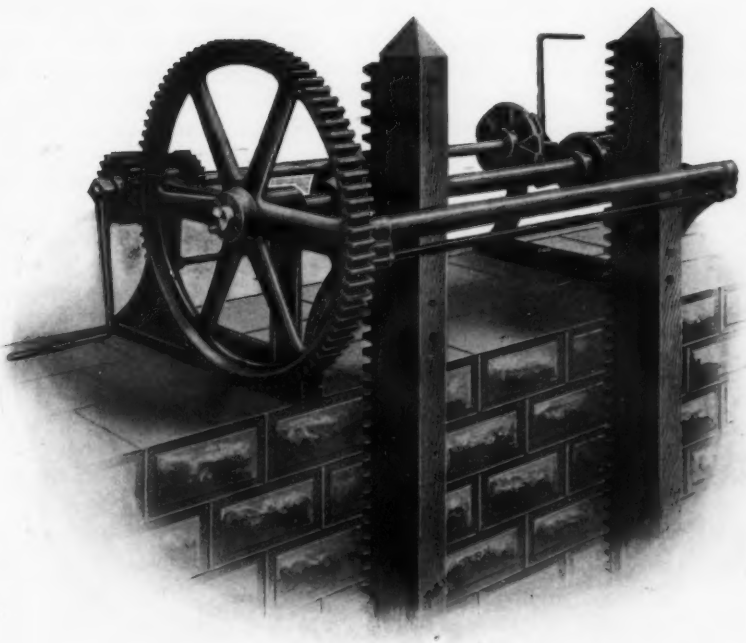


FIG. 2. A TWO STEM HEAD GATE HOIST WITH SPUR GEARS.

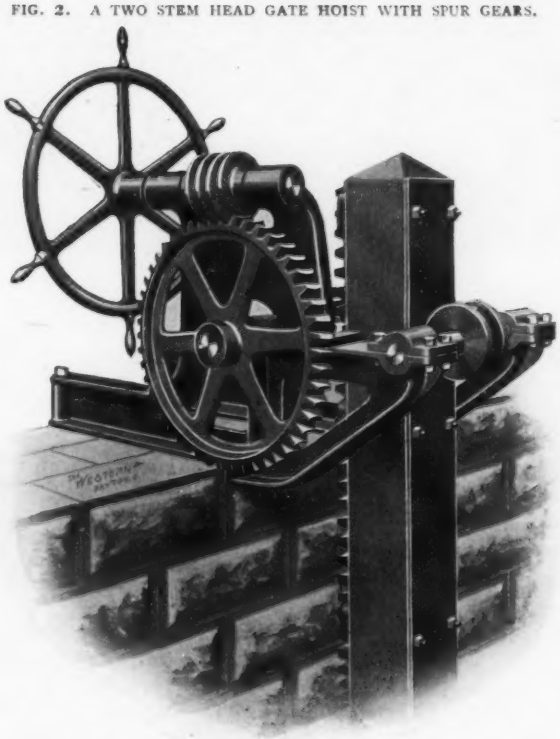


FIG. 3. A SINGLE STEM HEAD GATE HOIST WITH WORM GEAR.

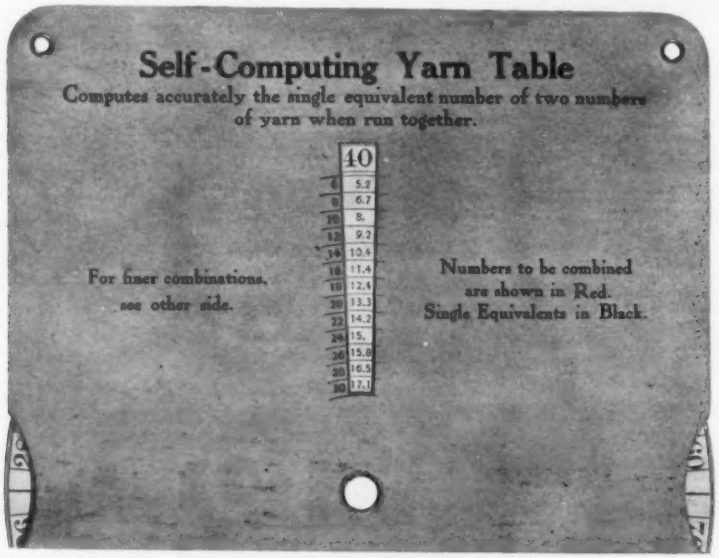
the hoists made by the Dayton Globe Iron Works Company are arranged to be used with both single and double stem. Generally head gates are made of planks substantially bolted together, the upper timbers extending above the water line to serve as a gate stem. To these stems are bolted a cast iron spur rack which engages with the pinions of the hoisting mechanism, and also with the stem and back plate bolted to the back of the gate stem and which prevents the back rolls from boring into the timber stem.

In addition to the regular types of hoists the Dayton company are doing a large business in special work for sluiceways and waste gates, the size and strength of the gates being adapted to the conditions found in each case. They also make hoists where, instead of a spur rack and pinion, the gate stem is made of steel shafting threaded and connected with a screw hoist with a bronze nut to match the threads on the stem. In some cases a bulkhead wall is provided with a number of gate openings, and hoists driven from one shaft, which is operated by a motor. This dispenses with the hand operation and makes a very convenient and efficient arrangement for large plants where a battery of gates is used.

A SELF-COMPUTING YARN TABLE.

It is frequently necessary in mill practice to calculate the resulting count of ply yarn made of two strands of different sizes. This is done by dividing the product of the single counts by their sum. For example, if two strands of cotton, 40s and 10s, are twisted together the resulting count is found thus: $400 \div 50 = 8$.

Very often it is desired to calculate the single count that must be combined with another single strand of known size in order to make a two-ply of a given size. This is done by dividing the product of the known counts by their difference. For example the count to be placed with No. 10 to make a two-ply equal to No. 8 is found thus: $80 \div 2 = 40$.



These calculations occur frequently in mill work and entail considerable labor. A. D. Salkeld & Bro., 66 Leonard Street, New York City, have recently issued a very ingenious self-computing yarn table by which the calculations are made automatically. The table, which is shown in the accompanying illustration, consists of a circular dial revolving between two covers. The figures on the dial are seen through the opening cut in the cover. To determine the count result-

ing from combining two single counts, the dial is turned until one of the single counts appears at the top of the opening in large letters. The resulting count is then indicated on the dial opposite the other single count, which is found on the cover. Thus, as the dial is shown in the illustration, 20s twisted with 40s gives 13.3s as the resulting count. If it is desired to know the single count that must be twisted with a single count of known size to produce a resulting two-ply count, the dial is turned until the known single count appears at the top of the opening. The resulting count is then found below it and the required single count is indicated at the left. Thus as the dial is shown in the accompanying illustration a 60s must be twisted with a 20s in order to produce a two-ply equal to 15s.

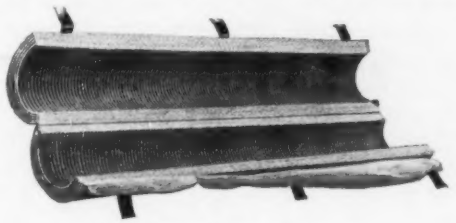
This ingenious yarn table will doubtless be of great value to mill men, particularly to knitters, who are frequently called upon to vary the size of a two-ply yarn by combining different sizes of single yarn. It is adapted for any fixed weight system of numbering yarn, whether cotton, worsted or other method, but in using it both numbers must, as a matter of course, be based on the same system.

A COVERING FOR HEATING SYSTEMS

Among the many brands of pipe covering on the market for hot water, steam and hot air heating systems, the "Asbestocel" covering manufactured by the H. W. Johns-Manville Co. is of special interest. This covering is not only an insulator of the highest efficiency, but is also absolutely fireproof and meets the fire underwriters' requirements.

It is made entirely of asbestos and is an improvement over the ordinary air-cell coverings, because the corrugations run around the pipe, as indicated in the accompanying illustration, instead of lengthwise, thus effectually preventing all circulation of air and consequent radiation of heat. This covering is also unusually strong and durable, owing to it being built on the well-known arch form of construction.

"Asbestocel" coverings are proven by actual tests to be capable of paying their initial cost in less than one year by the saving in coal consumption. They are made in sectional form for pipes, in sheets and blocks for large heating surfaces, and paper for hot air pipes. The H. W. Johns-Manville Co. have

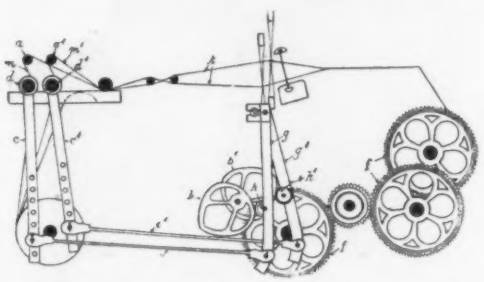


"ASBESTOCEL" PIPE COVERING.

recently issued an interesting folder, giving the results of actual tests made on this covering, a copy of which will be mailed upon application.

UNDULATING FILLING EFFECTS.

A device recently invented in Germany for producing undulating filling effects in woven goods is shown in the illustration herewith. It is based on the fact that warp under a high tension will take more picks per inch than when the tension is reduced. The warp threads are divided into several groups, which are subjected to various degrees of



tension. The threads on which the tension is to be varied are carried over felt covered rolls, a a′, which are vibrated by the cams, b b′. The rolls, a a′, are supported in arms fastened on the shafts, d d′, to which the levers, c c′, are also fastened. The cams are driven by a chain of gears beginning with gear, f. The speed can be varied as desired. The rolls, h h′, on the levers, g g′, press against the moving cams by means of the connecting rods, i i′, and the motion of the

cam is thus communicated to the rolls, a a'.

That part of the warp on which the tension is to be kept uniform is carried over an ordinary whip roll. More than two vibrating rolls can be used if desired. When the cam moves the roll back the tension is increased and the number of threads per inch of warp yarn correspondingly increased. When the roll is moved forward, however, the threads are slackened and the set of the filling decreased. The tension can be varied by varying the form and speed of the cams and the sweep of the levers.

A REVERSIBLE FAN FOR HANDLING WOOL, COTTON DUST, SHAVINGS, ETC.

A little over a year ago the New York Blower Company conceived the idea that a fan to handle shavings, wool, cotton, dust, sawdust and stringy material should be reversible as to hand and discharge, and should be provided with a wheel that could not become blocked.

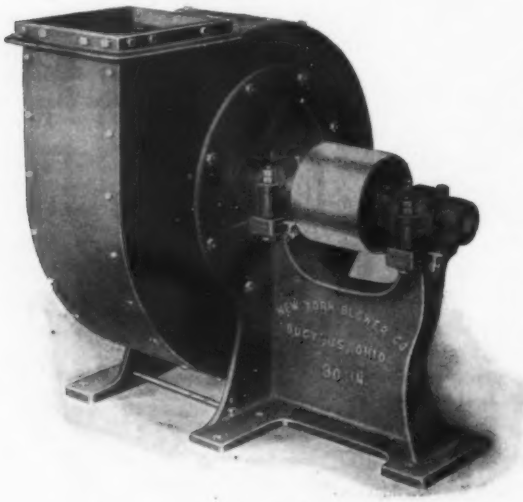


FIG. 1.

The officers of this company worked diligently with this end in view, and, as a result, have perfected the type of fan illustrated herewith, which has brought to them a very large amount of business.

Fig. 1 shows the New York Blower Co.'s reversible fan, with a right hand, vertical up discharge.

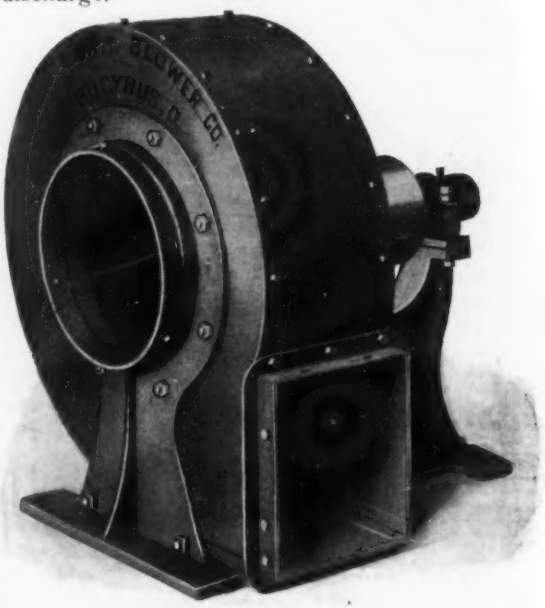


FIG. 2.

Anyone familiar with fans will note the strong points of this one, particularly the very short over-hang, which makes the fan unusually rigid.

Fig. 2 shows the other side of the fan, with a right hand, bottom horizontal discharge with inlet side exposed to view, as well as a minor portion of the wheel.

Fig. 3 shows the same fan, with the suction side removed, showing the inside of the fan, from which one can get a pretty clear idea of how the wheel is constructed.

The principal feature of this wheel is that the blades are cast directly into the cone of the wheel. Fig. 4 is a good illustration of how this is done, and shows the inlet side of the wheel.

There are of course no rivets to work loose, which proves the wheel to be lasting and strong.

The fans described above are built solid so as to run without a tremor at maximum speed. They are provided with increased pulley surface, the crown sheet and inlet being made of steel.

There is no buckling of suction side while at high speed.

These fans are provided with universal adjustment of bearings, not simply up and

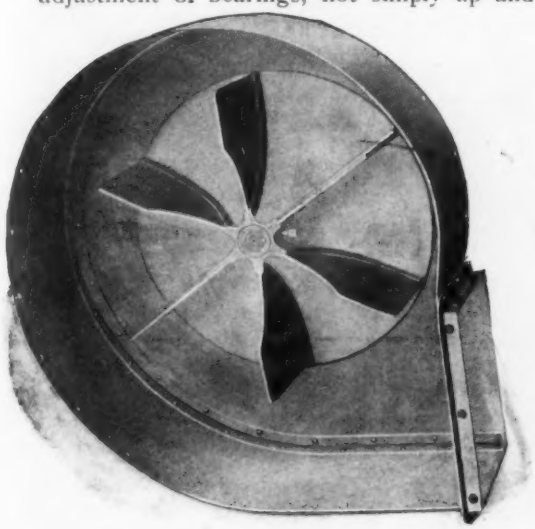


FIG. 3.

down, and the bearings are double ring oiling of the best babbitt, and reamed to size.

The New York Blower Company manu-

FIG. 4.

factures these fans in sizes from 30-inch to 60-inch, either single or double.

These fans are peculiarly adapted for the purposes for which they are intended, and as far as can be ascertained from reliable sources, give most satisfactory results.

Further information may be obtained from the New York Blower Company, 25th Place and Stewart Avenue, Chicago, Ill.

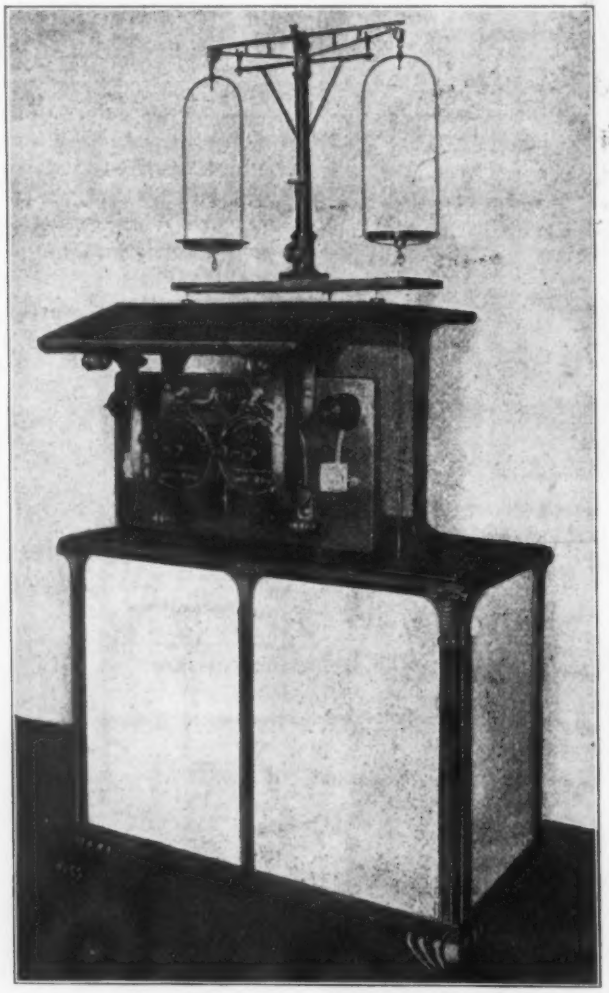
CONDITIONING APPARATUS.

In many branches of industry it is important to determine the amount of moisture in raw material, particularly manufactured material and the finished goods. This is especially the case in the textile industry where the materials are highly hygroscopic, and for this purpose a process has been used for many years by which the weight of the material is determined independently of the moisture it contains. This is called conditioning and is carried on as follows:

The material is dried until the weight ceases to change; if possible, without injuring its natural qualities. The commercial weight is obtained by adding to this dry weight a certain percentage which is the same in all cases for the same material. There are comparatively few conditioning houses and transportation of material from the factory to these houses consumes much time, is expensive, and involves considerable labor and trouble. As a consequence it is almost impossible for the manufacturer to determine regularly the conditioned weight of the material he receives and delivers unless he installs a conditioning apparatus in his mill. Apparatus of this kind is built in many forms and the generation of heat for drying is a most important part of the process. Many of the conditioning outfits on the market fulfill their object fairly well; others are so defective as to impair the confidence of the trade in the conditioning process. The high cost of many otherwise serviceable outfits restricts their use. A machine should be of moderate cost, safe and reliable in operation, arranged for the economical use of heat, capable of doing work rapidly, and being easily operated by one person.

All the conditioning apparatus heretofore used necessitated a draft of hot air, the heat being obtained either from steam, gas, or electric current. The difference in the vari-

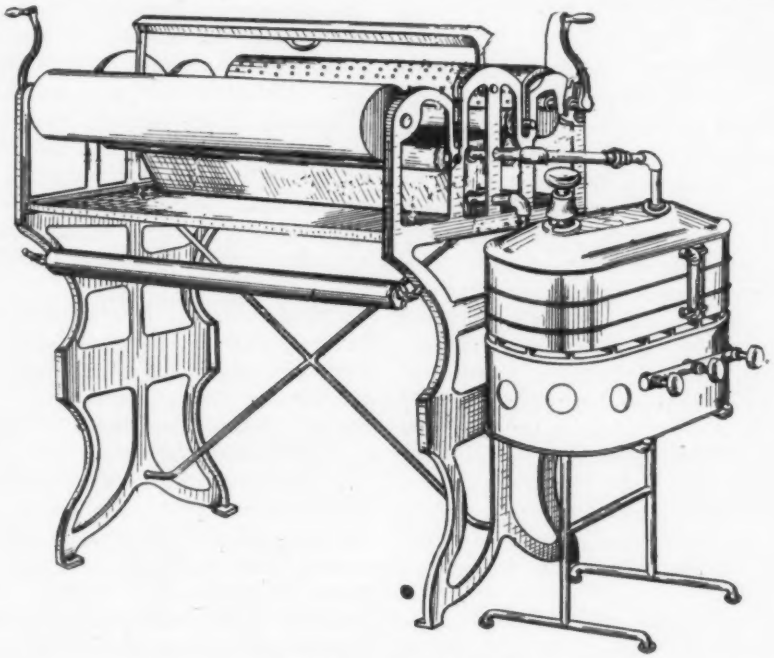
ous conditioning outfits on the market consists mainly in the manner in which the hot air is conducted to the material. It has been proved that all kinds of textile material can be treated much more rapidly than by methods heretofore in use, if in place of the air draft the material is heated by radiation from an electric light. By ordinary methods, only the surface of the material is heated while the centre retains the moisture long after the outside of the material is dried. By the use of the electric light, however, all parts of the material are heated uniformly and as a consequence the moisture is evaporated rapidly without injury to the fibre. Other advantages are the reduction in the cost of conditioning, the prevention of damage to the quality and color of the material tested, which can be mixed again with the lot from which it was taken. Moreover, the temperature can be kept uniform from the beginning to the end of the process.



A CONDITIONING APPARATUS

The apparatus can be set in any convenient place and the danger of fire or explosion is completely avoided. The apparatus is built in various forms suited to the materials to be handled, the accompanying illustration showing one adapted for textiles. It consists of two dry rooms, duplicates of each other, in which the material is left till

the weight is constant, a condition indicated by the apparatus above the chamber. Thus each room serves alternately as a drying and weighing room. On the partitions of both dry rooms are mounted special lamps. The carrying stands can be adjusted for different kinds of materials such as loose stock, yarn or cloth. A thermometer indicates the temperature and the flooring and ceiling of the rooms are provided with openings which are closed when the material is being weighed to prevent a disturbance by air drafts. A convenient desk is attached to the apparatus where a record can be made of the results of the test. The apparatus is delivered ready to be connected with an electric current.—Bruenner Monatschrift fuer Textil-Industrie.



A CLOTH SPONGING MACHINE.

A CLOTH SPONGING MACHINE.

The machine shown in the illustration herewith is used for sponging cloth and has recently been patented in this country. In describing the operation of the machine the inventor states:

"After the cloth which is to be shrunk has been rolled upon the steaming-drum the cap is removed from the end of the nipple on the boiler and the mouth of the steaming-drum is placed over the nipple. The steam from the boiler passes into the steaming-drum and out through the perforations in the side. When the cloth has been thoroughly steamed the steaming-drum is removed from the boiler and placed in its bearings in the frame. The cloth is then stretched across the top of the steaming-box and between a pair of the pressing-rollers, and the end of the cloth is wrapped around the wooden drum. The pressing-bar is then let down so that it lies on the surface of the cloth. The wooden drum is rotated, so as to wind the cloth on the drum from the steaming-drum. At the same time steam is admitted into the steaming-box, so that as the cloth travels over it it is exposed to the steam that rises through the perforations in the top of the box. The cloth can be wound back and forth from the wooden roller to the steaming-roller, carrying it back and forth across the steaming-box and between the pressing devices as many times as is desired, thoroughly shrinking the cloth and removing all wrinkles and creases."

Dyeing, Bleaching, Printing, Etc.

EFFECT OF SULPHUROUS ACID ON ARTIFICIAL DYES.

BY E. GRANDMOUGIN.
(In Zeitschrift fuer Farben Industrie.)

It is well known that many dyeings with natural dyes are stripped by sulphurous acid, and this method is extensively employed for wool and silk. It has not yet been decided whether the discharge of the color is due to the formation of a leuco-compound, i. e., as a consequence of reduction, or whether the dye couples with the sulphurous acid. The latter view is supported by the fact that the color can be restored by removing the reducing agent. On the whole the artificial dyestuffs show the same behavior to sulphur dioxide as the natural products; for example, the yellowing of certain brands on steaming the printed wool is probably due to combination with sulphurous acid. This is particularly the case with tetra-azo dyes, monazo dyes and benzidine derivatives, such as Anthracene Red, being far less liable to yellowing.

According to Binder, this yellowing may be prevented by steaming in cloths containing chlorate of soda. The chlorate, however, rapidly destroys the cloths. Another plan is to add the chlorate to the printing color, but this does not always answer. It is noticeable that a ponceau which has been yellowed by steaming returns to its original color on prolonging the steaming. This seems to show that the products first formed are decomposed again. It is also known that sulphurous acid in the form of sodium bisulphite can combine with dyes yielding in some cases bodies of great industrial importance.

But, besides the fact of the destruction of the color, we have to bear in mind color changes due to the acid character of the sulphur dioxide. Most dyes give colored solutions with concentrated sulphuric acids. Those of the azo dyes are often better adapted for spectroscopic examination than the aqueous solutions of the same dyes, the change of coloring being due to the formation of color salts. Some of the salts of the azo compounds have actually been isolated, in the case of azo-benzole and of 1.4 benzolazoalphanaphthol, for example. Even with derivatives of a more marked acid character, e. g., benzoazosalicylic acid and its homologues, there is a distinct formation of salts, although the compounds formed are of too small tinctorial power to be of technical value. Flavazol, which is paratoluidine azosalicylic acid, is no real exception to this rule.

Other classes of dyes, including, of course, basic dyes, show changes of color under the same circumstances. Thus, many of the anthrakinone derivatives give with concentrated sulphuric acid, with or without boric acid, splendidly colored liquids. Even bodies not usually classed as dyes, such as chrysazine, anthrarufine, chinizarine, etc., give deep red and highly fluorescent solutions with concentrated sulphuric acid, and the question naturally occurs whether these solutions could not be used for dyeing material capable of resisting strong sulphuric acid.

However this may be, experiment has shown that anhydrous liquid sulphurous acid has acted on the dyes tested with it neither as a reducing agent nor as an acid, but merely as a solvent. Every dye tried was more or less soluble in it, the basic dyes very freely, and in all cases the dye was recovered unchanged on evaporation. Azo compounds, such as benzolazobetanaphthol can be recrystallized from liquid sulphurous acid without any change in their properties. No action attributable to acid was visible, and the solutions obtained corresponded exactly with those from glacial acetic acid. The experiments were carried out at very low temperatures, as liquid sulphurous acid boils at 50° F. Whether the action would be different at higher temperatures has not

so far been tried, but if opportunity offers it will be done.

The following table gives representative examples of the results obtained:

Dye.	Concentrated Sulpuhric acid.	Concentrated sulphuric acid and boric.	Liquid sulphur dioxide.	Glacial acetic acid.
Azo benzole	yellow	yellow	yellow	yellow
Oxyazobenzole	dark yellow	yellow	dark yellowish	yellow
Amidoazobenzole	yellow	yellow	orange dark yellowish	orange
Benzolazoalpha-naphthol	cheery red	cherry red	orange orange	yellowish orange
1-2 Benzolazo alpha-naphthol	Bordeaux red	Bordeaux red	cherry red	reddish orange
1-4 Benzolazoalpha-naphthol	bluish violet (dichroic)	Bordeaux red	orange red	yellowish orange
Benzolazo salicylic acid	yellow	yellow	yellow (difficultly soluble)	yellow
Benzolazoalphaoxy-naphthoic acid	reddish violet	red	red (difficultly soluble)	yellowish red
Phenyldisazoalpha-naphthol	greenish grey	greenish grey	red (difficultly soluble)	red

FINISHING PIECE DYED COTTON GOODS.

BY H. DORNIG.
(In Deutsche Faerber Zeitung.)

The finishes required at present may be classified as dead, half-lustre, full lustre and moire, as regards appearance; and as soft, heavy, hard, full, woolly, cold, elastic, etc., as regards handle. The cotton is generally scoured under pressure before finishing, whatever the weave. The dressing must be so made that it harmonizes with the color of the fabric. Thus it must be dyed before use, and while for black it is best to dye the dressing with logwood, whatever the dye employed on the fabric may have been, it is generally advisable with other colors to dye the dressing with the same dye as has been used upon the fabric whenever that can be done. If this rule is observed and proper care is taken, there is no fear that the finishing will alter the shade of the goods.

The following are illustrations of the general procedure:

Grey moire cottons (for 2,000 yards.)—Make a bath with equal weights of logwood extract and water. Dissolve in it 62 lbs. of potato starch and 48 lbs. of wheat starch, and 6 1/2 lbs. of lard, and also a solution of 1 lb. of bichromate and 1/2 lb. sulphate of copper in boiling water. Then boil up. When the liquid begins to thicken add the necessary amount of iron salt to mordant the logwood, and boil under pressure until a sample of the fluid has a uniform viscid consistency. The finished dressing is applied on one or both sides of the fabric as may be required. After leaving the slashing machine the goods are dried, with or without stretching. Only inferior qualities are dried on hot cylinders, as they give the material a harsh-coarse feel. This effect may, however, be partially avoided by increasing the amount of lard in the size.

After drying the goods are allowed to get perfectly cool and are then sprayed with water. Sprinkling will not do, as large drops of water will cause stains. Then leave on the roller for five or six hours, and calender cold, regulating the time and pressure according to the effect desired. The greater the required lustre the heavier must be the calender pressure. Almost every kind of fabric requires its own pressure and temperature in the calendering.

Grey Twill Croises.—Boil together in water 40 lbs. of best China clay, 27 lbs. of wheat starch, 30 lbs. of potato starch, and from 5 to 11 lbs. of lard. Just before entering the goods put in 13 lbs. of Epsom salts, and boil the fabric for from 10 to 20 minutes.

Grey Moires.—Stir up 55 lbs. of China clay and about a gallon of logwood extract in about 40 gallons of water. Heat to a lukewarm temperature and then add from 7 to

14 lbs. of lard, together with a little alum and tinsalt, to preserve the color. Enter and boil under pressure for about half an hour.

Grey Jaconnets.—These require a special finish, and the finishing bath must be short, and not boiled for more than ten minutes. It is prepared by stirring up 20 lbs. of China clay in 20 gallons of water. When the clay is well stirred up add 4 lbs. of wheat flour and 9 lbs. of potato starch. Then warm the bath gradually, stirring in 5 lbs. of Epsom salts, and 5 lbs. of blacklead. When the liquid is fairly hot add from 2 to 4 lbs. of lard. Then enter the goods, together with logwood extract, alum and tinsalt in requisite quantities.

STRIPPING AGENTS FOR SHODDY.

BY BAUMWOLLE.

There are several methods of stripping shoddy or colored woolen rags. Before being stripped the rags are sorted into lots of different colors, red, blue, grey, etc., and then each lot is dyed to the color for which it is best suited. If the color is such that it cannot be redyed, then the shoddy is stripped; this operation may be performed with carbonate of soda, bichromate of soda, sulphuric and oxalic acids, hydrosulphite and hyraldite.

Dark colored rags, which cannot be stripped with alkali, are generally stripped with bichromate and acid, using from 3 to 6 per cent. of bichromate of potash, 6 to 12 per cent. of sulphuric acid, and 3 to 6 per cent. of oxalic acid. The shoddy is boiled in this solution from one half to one hour.

Many dyers use the hydrosulphite method. This solution is prepared with 1 pound of zinc dust, 1 gallon of bisulphite of soda at 70° Tw., and 1 gallon of water. Stir in the zinc dust slowly, letting it settle until the solution becomes clear. For stripping take from 3 to 5 pints of the clear solution to which has been added one half pint of acetic acid 8° Tw. for each ten gallons of water. The shoddy is entered into this solution at 140° for twenty to thirty minutes and after the stripping is well done is washed and soured, washed again and then dyed. Hydrosulphite solution is best when prepared fresh and added to the stripping bath just before being used.

Another method is stripping with hyraldite. This should be done in wooden tubs with a solution of 5 to 10 per cent. of hyraldite and 5 to 10 per cent. of acetic acid. The shoddy is worked in this bath for one hour at 120° and brought slowly to a boil. After being stripped it is washed, soured, washed again and dyed.

Bisulphite of soda can be purchased either as a salt or in the liquid state. It is produced by the action of sulphurous acid gas on soda crystals. It is a very useful product and has found extensive use in dyeing and bleaching, also in the allied trades of color making and printing.

Prepared hydrosulphite can be purchased from the leading color makers and chemical works. For those who use it in large quantities and prefer to prepare it themselves it is a good plan to have a filter press, but for preparing it in small quantities no elaborate apparatus is needed.

There is no hard and fast rule for stripping shoddy, and the formula will have to be modified to suit the color. A solution that will remove the color in one case will have no effect on it in another, so those who are inexperienced in the matter of stripping shoddy will do well to experiment with small sample batches of each color and keep a record of such experiments for their future guidance.

ONE DIP DYES ON WOOL.

One bath dyeing for loose wool and yarn has been largely adopted of late years. This method effects a saving of time, fuel, and dye, and ensures the preservation of the fibre and the equalization of the dyeing. It is true that it is somewhat more difficult for a beginner to hit the shade, but after a little practice the dyer can do it as well with the one as with the two-bath process. The goods have only to be carefully watched both before and after chroming. The small dyer, too, should accustom himself to use one range of dyes as far as possible. The close connection exist-

ing between the members of the same range enables him to acquire rapidly a comprehensive knowledge of the whole series. Persons working on a large scale and with all sorts of colors, and fabrics must, of course, have a more extended knowledge.

In shading with more dye remember to cool the bath to some extent before re-entering the goods. Many dyes fast to washing, milling, and resisting the chrome-mordant can be used in minute quantities for shading. Examples of them are Milling Red, Wool Red, Diamine Fast Red, Milling Yellow O, Formyl Violet 4B and 10B, Fast Acid Violet, Brilliant Milling Blue R, Patent Blue A, Formyl Blue B, and Brilliant Milling Green B; some of these equalize so well that they can even be added without taking the bath off the boil.

Among the colors dyed by the one bath method, the blacks hold undoubtedly the first place, and it is fortunate that we have at last a large number of excellent one bath blacks, such as the Anthracene Chrome brands of Cassella which serve also for half wools. Anthracene Chrome Black gives an excellent imitation of logwood black. Diamond Black (Bayer), is another excellent dye for our purposes. In dyeing military woolen cloths in Germany, Austria, and Italy, Acid Alizarine Black and Alizarine Black have quite driven chrome logwood dyeings out of the field as they are faster than the latter to light and acids. Of the other dyes suitable for the one bath process we may say that most of the artificial blacks intended to be dyed according to this process answer very well.

The goods are entered at from 104° to 140° F. into a solution containing the one bath black together with from 1 to 4 per cent. of sulphuric acid, and 10 per cent. of Glauber's salt. Boil up slowly and boil for a full hour. Then lift, cool the bath a little, add then the bichromate, re-enter the goods, boil up rather slowly and keep at the boil for 45 minutes. The amount of bichromate required depends upon circumstances. On a rough average it is about two-thirds of the weight of the dye used, but it must never exceed 3 per cent. of the weight of the goods. If the dye used has any action on copper, e. g., the anthracene chrome dyes, and if a copper pan is in use, add half a pound of ammonium sulphocyanide to the water in the pan first of all and dissolve the haloid salt completely. Then, and not before, dye, Glauber's salt, etc., are put in.

In working with Anthracene Acid Brown R, N, B, V, SW or Anthracene Yellow GG, C, R, or with combinations of these dyes it is advisable to enter at a lower temperature, viz, at about 104° F., with from 1 to 2 per cent. of acetic acid. Then boil up fairly fast, and boil for half an hour. Then exhaust the bath with from 3 to 6 per cent. of acetic acid and from 2 to 4 per cent. of tartar preparation, and finally chrome. Formic acid is a good substitute for acetic acid here. Less of it is wanted than acetic, and the acid is cheaper than it used to be.—Deutsche Faerber Zeitung.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 1.

Red on Cotton Yarn.

Benzo Fast Red 9 B L on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Benzo Fast Red 9 B L.
(Continental Color & Chemical Co., 128 Duane St., New York.)
2 lbs. Soda Ash.
30 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for one hour.

Benzo Fast Red 9 B I. possesses very good fastness to light and alkalies. It dyes very level.

Recipe No. 2.

Yellow on Cotton Yarn.

Chlorazol Fast Yellow B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Chlorazol Fast Yellow B.
(Read Holliday & Sons, 7 Platt St., New York.)
20 lbs. Common Salt.

Dye with closed steam.

Chlorazol Fast Yellow B is one of the direct cotton colors and is exceptionally fast to light.

Recipe No. 3.

Blue Black on Worsted Yarn.

Diamond Blue Black R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Diamond Blue Black R.
(Continental Color & Chemical Co., 128 Duane St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter yarn at 180° F., and bring to a boil. Dye at a boil for one-half hour, then add

2 lbs. Sulphuric Acid,

and continue the boiling until the dye bath is exhausted, then add

1½ lbs. Potassium Bichromate,

and boil three-quarters of an hour longer.

Diamond Blue Black R is a level dyeing color possessing very good fastness to light, alkalies, washing, steaming and stoving.

Recipe No. 4.

Blue on Worsted Yarn.

Acid Blue R on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Acid Blue R.
(W. F. Sykes & Co., 85 Water St., New York.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter yarn at 140° F., and dye at a boil for one hour.

Acid Blue R possesses high coloring power and produces a neutral blue.

Recipe No. 5.

Violet on Cotton Yarn.

Chlorazol Violet R on 100 lbs. cotton yarn. Prepare the dye bath with

1 lb. Chlorazol Violet R.
(Read Holliday & Sons, 7 Platt St., New York.)
10 lbs. Glauber's Salt.

Dye with closed steam.

Chlorazol Violet R gives a fine heliotrope shade and possesses a very good fastness to washing.

Recipe No. 6.

Sulphur Brown on Cotton Yarn.

Pyrol Brown R Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

First Bath.

8 lbs. Pyrol Brown R Conc.
(C. Bischoff & Co., 451 Washington St., New York.)
16 lbs. Sodium Sulphide Crystals.
10 lbs. Soda Ash.
60 lbs. Common Salt.

Second Bath.

6 lbs. Pyrol Brown R Conc.
(C. Bischoff & Co., 451 Washington St., New York.)
12 lbs. Sodium Sulphide Crystals.
2 lbs. Soda Ash.
6 lbs. Common Salt.

Dye at a temperature just below the boil for one hour.

Pyrol Brown R Conc. possesses the fastness characteristic of the other sulphur browns.

Recipe No. 7.

Blue on Cotton Yarn.

Naphtamine Blue 7 B on 100 lbs. bleached cotton yarn. Prepare the dye bath with

4 lbs. Naphtamine Blue 7 B.
(Kalle & Co., 530 Canal St., New York.)
30 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Naphtamine Blue 7 B will be found an excellent direct cotton color, both in the production of direct dyeings and compound shades.

Recipe No. 8.

Yellow on Cotton Yarn.

Tetrazo Chlor Yellow G on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Tetrazo Chlor Yellow G.
(American Dyewood Co., 154 William St., New York.)
20 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Tetrazo Chlor Yellow G possesses excellent fastness to light.

Recipe No. 9.

Blue on Cotton Yarn.

Pyrogen Indigo R on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Pyrogen Indigo R
(A. Klipstein & Co., 122 Pearl St., New York.)
16 lbs. Sodium Sulphide Crystals.
5 lbs. Sodium Carbonate.
80 lbs. Common Salt.

Boil up the dye bath, after all additions have been made. Enter yarn at about 180° to 190° F., and dye at, or just below a boil, for one hour.

Pyrogen Indigo R produces a shade of blue very similar to indigo and possesses the characteristic fastness of the sulphur blues.

Recipe No. 10.

Red on Worsted Yarn.

Grenat R 80 on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Grenat R 80.
(W. F. Sykes & Co., 85 Water St., New York.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter yarn at 140° F., raise to a boil, and dye at a boil for one hour.

Grenat R 80 has a high coloring power and can be used to advantage in the production of bluish pinks.

Recipe No. 11.

Brown on Cotton Yarn.

Chlorazol Brown R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Chlorazol Brown R.
(Read Holliday & Sons, 7 Platt St., New York.)
30 lbs. Common Salt.

Dye with closed steam.

Recipe No. 12.

Blue Black on Worsted Yarn.

Alizarine Blue Black 5 B on 100 lbs. worsted yarn. Prepare the dye bath with

4½ lbs. Alizarine Blue Black 5 B.
(Cassella Color Co., 182 Front St., New York.)
10 lbs. Glauber's Salt.
10 lbs. Sodium Bisulphate,

or

5 lbs. Acetic Acid.
20 lbs. Glauber's Salt.
2 lbs. Sulphuric Acid

toward the end of the dyeing to exhaust the dye bath.

Enter yarn at 140° F., raise to a boil in one-half hour, and dye at a boil until the bath is exhausted.

Alizarine Blue Black 5 B possesses excellent fastness to light, alkalies, and acids and produces an excellent shade of blue black.

Recipe No. 13.

Violet on Cotton Yarn.

Chlorazol Violet R on 100 lbs. cotton yarn. Prepare the dye bath with

1½ ozs. Chlorazol Violet R.
(Read Holliday & Sons, 7 Platt St., New York.)
10 lbs. Glauber's Salt.

Dye with closed steam.

Chlorazol Violet R is one of the direct cotton colors, gives fine heliotrope shades and possesses very good fastness to washing.

Recipe No. 14.

Black on Woolen Cloth.

Amine Black 6 B on 100 lbs. woolen cloth. Prepare the dye bath with

6½ lbs. Amine Black 6 B.
(Berlin Aniline Works, 213 Water St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 140° F., and raise slowly to a boil. After boiling three-quarters of an hour, add

1 lb. Sulphuric Acid,

or

3 lbs. Bisulphate of Soda.

Boil one-half hour longer to exhaust the dye bath.

Amine Black 6 B yields an excellent shade of blue black. It possesses very good fastness to light, and good fastness to steaming, alkalies, acids and rubbing. It will be found of interest for the piece dyeing of ladies' dress goods and suitings.

Recipe No. 15.

Violet on Worsted Yarn.

Metamido Violet R on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Metamido Violet R.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston, Mass.)
2 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil until the bath is exhausted.

Metamido Violet R is an exceedingly level dyeing color.

Recipe No. 16.

Violet on Worsted Yarn.

Guinea Violet 6 B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Guinea Violet 6 B.
(Berlin Aniline Works, 213 Water St., New York.)
5 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter yarn at 140° F., and raise slowly to a boil. Boil three-quarters of an hour and add

1½ lbs. Sulphuric Acid.

Boil one-half hour longer and wash.

Guinea Violet 6 B is of special interest for union dyeing as it dyes wool well from a neutral Glauber's salt bath. It possesses good fastness to most of the color-destroying agencies.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

Florida, Jacksonville. The Ide Cotton Mills Company is to hold a meeting in January for purpose of arranging details for erecting a new 25,000 spindle mill for purpose of making yarns. Plans will also be made for erecting a large electric power plant, for purpose of furnishing power for present and new plant.

*Georgia, Columbus. The Swift Spinning Mills, recently incorporated with capital stock of $125,000 minimum and $500,000 maximum, will start work shortly on erection of a new building, in which 10,000 ring spindles will be installed. They will make yarns, 8s to 16s and will use electricity.

Canada, Quebec, Shawinigan Falls. The North American Cotton Co., incorporated, $2,000,000 common, $1,000,000 preferred stock, proposes starting work about May on the new buildings which they propose erecting for manufacturing grey cloths. The proposed equipment is to be 100,000 ring spindles and 2,500 looms. Jas. H. Webb is president of the company; C. E. Hanna, treasurer. The company has been but recently organized and full particulars have not yet been decided.

*Georgia, Acworth. The Acworth Cotton Mills expect to begin operations about January, making yarns.

*Georgia, Summerville. Work has begun on structure of new buildings for the Summerville Cotton Mills, cappitalized at $150,000. They will manufacture duck, and will have equipment of 5,000 spindles and 150 looms. Jno. D. Taylor is president and treasurer of the company and Ernest Montgomery, superintendent. Product will be sold direct.

*Massachusetts, Fall River. The new plant of the Lincoln Manufacturing Co. will have capacity for 120,000 spindles, although mill will be equipped with but 15,000 mule and 30,000 ring spindles and 1,000 looms at start.

*Massachusetts, Fitchburg. Site has been chosen for erection of the new yarn mill by the Fitchburg Yarn Company. Work will start early in the spring on the proposed new plant. The main building will be 400 by 115 feet, three stories, brick.

*Massachusetts, New Bedford. The Quansett Spinning Company has started work on foundations for the new buildings to be erected for making fine yarns. Will have an equipment of 60,000 spindles. This company is capitalized at $600,000; William C. Hawes is president of the company, Frederic H. Taber, treasurer and Lewis E. Bentley, superintendent.

*New Hampshire, Barnstead. The New Hampshire Artistic Web Co. is operating plant formerly run by the American Narrow Web Co. Plant is equipped with 20 looms for making braids, with intention of manufacturing suspenders, belts, lace, etc.

*New York, Little Falls. The Little Falls Fibre Co. has purchased the Anchor Mill property adjoining present property and has started manufacturing cotton bats and shoddies.

*North Carolina, Mt. Holly. The new plant of the Woodlawn Manufacturing Company is expected to be completed early in January. This plant will have an equipment of 5,200 spindles.

*Oklahoma, Guthrie. The Pioneer Cotton Mills propose starting their new cordage plant about January 1st, with J. A. Stadum, formerly at the Argonaut Mills, Covington, Ky., as superintendent.

Pennsylvania, Philadelphia. Plans and specifications have been completed by Messrs. Stearns & Castor, architects, for a four-story brick lace factory to be erected at Courtland and A Streets, Olney, for John Graf. The building will measure 126 by 44.2 feet and will be of slow burning construction. The plans will be submitted to contractors for estimation within a few days.

Pennsylvania, Philadelphia. The National Spinning Co., which has recently applied for a charter under the laws of New Jersey, with a capital of $300,000, will be located in the old Frogmore Mills on Powder Mill Road, Frankford. The plant will be equipped with 12,000 spindles, half of which will be run on warp yarns and the balance on hosiery yarns. Messrs. Stanley & Smith, proprietors of the Stanley Manufacturing Co., Adams Avenue, twisters, winders, coners and tubers of all kinds of yarns are among the incorporators and will manage the mill. The mill will be equipped throughout with entirely new machinery and will be up-to-date in every particular.

*Rhode Island, Pawtucket. Work has been completed on the main building for the Burgess Mills, this plant is now ready for the machinery. The first floor will be used for carding and preparatory machinery; the second for mule spinning and the third for ring spinning, spooling, warping, etc. The weave shed will be 320 by 270 feet, with saw tooth roof.

*South Carolina, Pacolet. The new No. 5 mill for the Pacolet Manufacturing Co. is nearly completed. This mill will have an equipment of 32,760 spindles and 942 36 and 40-inch Draper looms. Company makes brown sheetings and drills.

Enlargements and Improvements.

Alabama, Huntsville. At recent meeting of the directors of the Abington Cotton Mills, it was voted to build an addition. Plans have been pre-

pared and contract awarded for a new building, 80 by 60 feet, in which several thousand spindles will be installed.

Connecticut, Middletown. The Russell Mfg. Co. has started erection of a new dye house, 232 by 42 feet, two stories and one story, brick. The new dye house will probably be ready for occupancy about April 1st.

*Georgia, Columbus. The Eagle & Phenix Mills have let contract for equipping the plant with electricity, for power and light.

Georgia, Roswell. The Laurel Mills Mfg. Co. is reported to increase the capital stock from $55,000 to $150,000. They may be considering enlargements of the plant.

*Maine, Lewiston. Efforts are being made by the Avon Mfg. Co. to have the spinning mill, No. 2, in operation in February. The plant will start with equipment of 5,000 spindles, which they propose increasing within short time to 15,000.

Maryland, Warren. The Warren Manufacturing Co. is building a three-story extension to the mill. A separate boiler and engine house will also be built.

Massachusetts, New Bedford. The Wamsutta Mills have placed a large repeat order with the American Moistening Company, Boston, for the equipment of their new weave shed. The Wamsutta Mills now have over 400 humidifiers of the American Moistening Company in operation in their various mills.

*Massachusetts, Three Rivers. Work has been completed on the enlargement to the Otis Company's mill, started last August.

North Carolina, Burlington. An additional story is being built to the Hopedale Mills Company's plant for purpose of installing some 2,200 new twister spindles and several spoolers.

North Carolina, Greensboro. The Pomona Cotton Mfg. Co., reported to enlarge plant, will install 10,000 additional spindles some time next year in addition which has already been built.

*Pennsylvania, Mohn's Store. The Worley Cotton Batting Mill will be rebuilt, with 3 sets cotton batting cards.

*North Carolina, Laurinburg. The Dickson Cotton Mills are in full operation, the new addition having been completed.

*North Carolina, McAdensville. The McAden Mills are installing 10,000 new spindles in the plant and replacing old looms (335) with new ones. They have also made various other improvements about the plant, including carding machinery and twisters and refitting the dye house.

South Carolina, Anderson. Contract has been let by the Toxaway Mills for installation of 4,000 additional spindles and 116 looms.

South Carolina, Enoree. The Enoree Manufacturing Co. has placed order for 300 new "Ideal" automatic looms.

*South Carolina, Spartanburg. The Spartan Cotton Mills have completed installation of 700 new Draper looms, replacing the old style looms.

South Carolina, Gaffney. Preparations are under way by the Irene Mills for increasing capacity of the plant.

*Tennessee, Trenton. The Trenton Cotton Mills are being changed from a cloth plant to manufacturing yarns. Work will be completed in from 60 to 90 days and when complete will make skein yarn. This plant is now under new management, with D. L. Lewis, president; H. Smith, vice-president and J. A. Lewis, secretary and treasurer.

*Texas, Denison. The Denison Cotton Mill Co., capitalized at $150,000, has started operations making ducks, 28 1/2 to 72 in. inclusive. The mill is being equipped with 170 new looms, in addition to the 12,144 ring spindles. Will discontinue making yarns. Product is sold through Wm. L. Barrell Co.

WOOLEN.

New Mills.

*Canada, Lethbridge. Work has been started on erection of the new mill for the Lethbridge Woolen Company, Ltd., formerly located at Medicine Hat. This company, of which M. Freeman is president; Geo. Whelen, treasurer and Philip Whelen, superintendent, will start operations about March, making blankets. Product will be sold direct and through Bryce & Co., Winnipeg.

*Connecticut, Rockville. Work has begun on the interior of the new buildings for the Minterburn Mills. Work will also start at once on erection of a large boiler house and dye house. A concrete chimney, 175 feet high, will be built.

*Massachusetts, Clinton. The new building to be erected for the Pickford Worsted Co. will be two stories, 100 by 36 feet, instead of one story, as was reported.

Massachusetts, North Adams. The Mayflower Worsted Mills have been incorporated with capital stock of $150,000, to operate the Dunbar Mills, recently purchased by A. J. Buffum, who will have position of treasurer and general agent in the new concern. Worsteds for dress goods and men's wear will be made. Product will be sold through the Earnscliffe Worsted Mills, New York. Operations will start with 100 looms, using electricity for power.

*New York, Jamestown. Operations will start about the middle of February in the plant to be established by The Ashworth & Odell Worsted Co., recently organized. The plant will be equipped with 1,500 worsted spindles for making worsted yarns 15s to 40s (Bradford system).

*New York, Jamestown. An addition 40 by 120 feet, 2 stories, is being built to the plant secured by the Greenwood Worsted Mills, recently incorporated with capital stock of $150,000. This concern will manufacture dress goods.

*North Carolina, Winston-Salem. The Chatham Mfg. Co. (Elkin) will start work on erection of their new mill at this place, as soon as plans are completed. They expect to have the mill in operation by July, with equipment of 6 sets and 50 looms, making woolen blankets, to be sold direct.

*Rhode Island, Pascoag. Machinery is being received and installed in the Hawthorne Worsted Co.'s Mill and operations will probably be started up some time in January.

*Rhode Island, Woonsocket. Work has been completed on the erection of the new mill for the French Worsted Co. It is stated that they are preparing plans for another new mill to be built.

Enlargements and Improvements.

Connecticut, Buckland. Ten new looms have recently been installed in E. E. Hilliard & Co.'s mill. It is proposed to build an addition to the finishing room in the spring.

Connecticut, Vernon. The Vernon Woolen Company has added eight new broad looms, replacing 16 narrow ones.

Illinois, Lacon. The Lacon Woolen Mill is to erect a new building and will double present capacity of the plant.

Maine, Sanford. Jagger Bros. have awarded contract for erection of a new mill, 100 by 54 feet, three stories, with separate boiler and engine house, 30 by 80 feet, one and one-half stories. It is expected to have the new building in operation by March.

Massachusetts, Worcester. The Millbury Worsted Co. is to double the capacity of the weaving department and will install 21 additional looms.

Massachusetts, Worcester. A new addition has been built to M. J. Whittall's mill and 2 sets of cards have been installed for making woolen yarns. It is proposed to install 12 more sets cards within a year.

Missouri, Sedalia. The Sedalia Woolen Mills Co. is to increase the capital stock to $60,000. The question of doubling capacity of the plant will be considered.

New Jersey. The Forstmann-Huffmann Co. is installing the American Moistening Company's (Boston, Mass.) system of humidification.

Pennsylvania, Norristown. The Abraham Hirsh Co., now on East Lafayette St., are getting ready to remove into their new building at McKinley Ave. and Washington St. The plant when removed to its new location will contain 40 looms and a dye house, and will be operated by electricity. They manufacture granite art squares and are very busy. The mill is 75 by 100 feet, three stories, of brick. Abraham Hirsh is manager and buyer for the company.

Pennsylvania, Philadelphia. A one story addition, 23 by 25 feet is to be built to the shipping and office departments of the Fern Rock Woolen Mills.

Pennsylvania, Philadelphia. Erben Harding & Company have placed a large repeat order for humidifiers with the American Moistening Company, Boston, Mass. The system is to be installed in their new Tacony Mill.

*Rhode Island, Woonsocket. Work has been finished on the new two-story building for the Lafayette Worsted Company, to be used for wool combing. They will install one set French and one set English combs and expect to have same in operation about February or March.

Wisconsin, Prairie du Chien. New machinery is being added at the Prairie du Chien Woolen Mills, including a new 250 h. p. engine and a complete new spinning machine. Work is nearly completed on the new addition for the spinning department.

Mills Starting Up.

California, Eureka. Operations will be resumed in January in the Humboldt Bay Woolen Mills. These mills have not been running since the San Francisco disaster.

*New Hampshire, Newport. Operations have been started in the Brampton Woolen Co.'s new mill.

*Rhode Island, Allenton. Work is being pushed to completion at the Belleville Mills recently purchased by Joseph E. Fletcher. Operations will be started early in January. It is stated that operations will be started in the mill as it stands, but that in the spring new looms will be installed. Plant will be known hereafter as the Allenton Woolen Co.

Mills Shutting Down.

Maine, Madison. The Indian Spring Mills have been shut down. It is not known when operations will be resumed.

Oregon, Stayton. The Stayton Carding & Spinning Mills have been closed indefinitely.

Pennsylvania, Williamsport. The Williamsport Woolen Co.'s mill has been closed for an indefinite time.

Virginia, Buena Vista. It is reported that the Buena Vista Woolen Mills, McLean & McMurty, have been closed and will be offered for sale.

For Knitting Mill News, see Knitting Department.

SILK.

New Mills.

New Jersey, West Hoboken. The Mistletoe Silk Mills have been incorporated with capital stock of $100,000 by G. A. Hurlimann of this place, R. Nixon, (Summit) and E. R. Weiss, (Paterson.)

*Pennsylvania, East Allentown. Kaltenbach & Stephens, proprietors of the Knickerbocker Ribbon Mills, Brooklyn, N. Y., are having erected for their use a branch mill at this place in which they will install 150 narrow looms for the manufacture of ribbons. The new mill will be of complete steel construction, 360 by 90 feet, one story and is being built by the Interstate Construction Co. of Bedford, O.

MISCELLANEOUS.

Miscellaneous.

*New Hampshire, Milford. The Middlesex Linen Company has been incorporated with capital stock of $50,000 for purpose of manufacturing linen goods. The company has been exempted from taxation for a period of ten years.

Pennsylvania, Allentown. Messrs. Pickup & Kean, Summer Ave., near 5th St., dyers of cotton yarns, are very busy and report that it is their intention to put up a new building during the coming spring, enlarging plant three times its present size.

*Pennsylvania, Reading. The Neversink Dye Works, incorporated to continue the Knoll & Althouse plant, are removing to their new plant, 500-540 Pear St., which they expect to have in full operation by Dec. 10th. No. 1 building is 45 by 205 feet, one and two stories, and No. 2 building 46 by 205 feet, one story. Additional buildings have been built for boiler and engine houses. New 100 h. p. engine and boilers have been installed. J. G. Knoll is president of the corporation, N. S. Althouse, treasurer and C. Scott Althouse, secretary.

Rhode Island, Woonsocket. Work is well under way on an addition to the Friedrichs Dyeing Co.'s plant. The company will take up department for dyeing of yarn in skein when located in their new building.

*Tennessee, Memphis. The American Bag Co., capitalized at $250,000, will start operations in their new mill about March 1st, making cotton and burlap bags. Plant will be equipped with bleaching and finishing department. L. D. Falls is president of the company; W. H. Carter, vice-president and Hill Bond, secretary and treasurer. Will sell direct.

FAILURES AND SUSPENSIONS.

Delaware, Smyrna. The Bitzer Hosiery Company's plant has been placed in the hands of a receiver, viz; William M. Hope of Dover. Efforts are being made by the Board of Trade to reopen the mill for the winter.

New Jersey, Paterson. An assignment, for benefit of the creditors, has been made by Augustus Banningan, of the Banner Silk Company. V. Fiske Wilcox has matter in charge and is disposing of the property and settling affairs with the creditors.

*New York, Rondout. A petition in bankruptcy has been filed against the Hudson Valley Mills, manufacturing children's underwear.

FIRES.

Massachusetts, Athol. The satinet mill operated by E. S. Handy has been destroyed by fire. The loss is estimated at $20,000; insurance of $10,000.

Massachusetts, Franklin. The shoddy and blanket mill operated here by the Mine Brook Mfg. Co., E. Waite, treasurer, has been totally destroyed by fire. The loss is estimated at $12,000.

New York, Averill Park. The Faith Knitting Company's Mill has been destroyed by fire. The loss is estimated at about $100,000. Although covered by insurance, it has not been definitely decided from rebuilding.

New York, Little Falls. Fire which started in the No. 1 mill of the Robt. McKinnon plant, caused loss of about $10,000. The mill has been closed for purpose of making repairs.

North Carolina, Weldon. The cotton storage warehouse of the Weldon Cotton Manufacturing Co.'s plant has been destroyed by fire. The loss is estimated at $25,000, with insurance of $20,500.

Pennsylvania, Philadelphia. A recent fire in the Ideal Hosiery Mills, 2821 Jasper St., damaged the plant to the extent of $3500. The mill is operated by Jones & Page manufacturing ladies' and misses' hose on 22 knitters and has been in operation for about a year.

Pennsylvania, Philadelphia. F. W. Walter & Co.'s Nicetown Mills, in which they manufactured wool shoddies and garnetted worsted waste on 13 sets, located at Broad and Germantown Ave., was damaged to the extent of $3,000 by a fire which is supposed to have been caused by spontaneous combustion.

Pennsylvania, West Conshohocken. The Merion Worsted Mills, operated on French spun worsted yarns with 12 combs, 12 cards and 12,000 spindles, was almost destroyed by fire on the night of Dec. 7. The plant was damaged to the extent of $75,000.

Rhode Island, Providence. Fire which started in the finishing room of the Vesta Knitting Co.'s plant caused damaged of about $10,000. Property is covered by insurance.

FACTS AND GOSSIP.

California, Sacramento. The Capital Wool Works Co. has been incorporated with capital stock of $15,000 for purpose of manufacturing shoddy, wool goods, etc. S. Poska, F. W. Robinson and M. Gottorski, are interested.

Canada, Glencoe. It is reported that operations have been started by the Glencoe Woolen Mill, Ltd., making knit goods.

Canada, Ontario, Peterboro. It is reported that a large carpet plant is to be established here by the Crossley Carpet Company. From 500 to 600 people will be employed.

Canada, Quebec, Lachine. It is reported that a number of Montreal capitalists have made application to the Municipal Council (Montreal) for exemption from taxes and a bonus to build a large cotton factory at this place. The proposed plant is estimated to cost about $1,000,000.

*Connecticut, Packerville. The Cutler Mills Co. is name of the new company organized to operate the mill at this place and not the Packerville Cotton Mills Co. Company has capital stock of $20.000 and will make fancy cotton scrims. W. C. Reid is president of the company; P. E. Dudley, treasurer and agent and C. J. Gamble, superintendent. Operations will be resumed about Jan. 1st. Reorganization is due to previous mismanagement.

Georgia, Athens. The Southern Manufacturing Co. is reported as contemplating doubling capacity.

*Georgia, Roswell. The Laurel Mills Mfg. Co., reported to increase capital stock, have as yet made no definite decision on enlargement.

Georgia, Rossville. J. L. Hutcheson has disposed of his interest in the Park Woolen Mills and will devote his entire time to the Peerless Woolen Mills.

*Indian Territory, Chickasha. A committee, comprising S. Howard Leech, Lawrence Martin and L. M. Potts, has been appointed by the Commercial Club to make investigations regarding establishment of a cotton mill at this place. A plant of about 10,000 spindle capacity, starting with 5,000, to make sheetings and ducks. Estimates are being secured for such a plant. They desire to secure the services of one or two qualified superintendents who will take a financial interest in the company. The principal part of the capital is to be raised locally.

*Maryland, Baltimore. The Calvert Cloth Co. is capitalized at $100,000 and operates 6 sets cards and 40 looms. A. G. Jacobs is president of the company; I. H. Myers, treasurer and Otto Scharegge, superintendent and buyer. A dye house is run in connection with the plant.

Massachusetts, Dodge. It is reported that operations are soon to be resumed in the C. W. Pike satinet mill, which has been closed for some time.

Massachusetts, Fall River. The Lincoln Mfg. Co. has adopted the American Moistening Co., of Boston, Mass., system of humidification.

Massachusetts, Fall River. It is reported that the American Thread Company contemplates erecting a new mill in this city.

*Massachusetts, Franklin. The Mine Brook Mfg. Co. has not yet fully decided about rebuilding, but if they do, it will probably be in another location.

Massachusetts, Lowell. The Boott Mills have placed a large repeat order for humidifiers with the American Moistening Company, Boston, Mass.

Massachusetts, Middleboro. The New England Rug Co.'s plant and the Oriental Rug Co., of Newark, N. J., has been acquired by John A. White and W. Osgood Eddy, who have formed a new partnership for operating the mills. These mills make rugs from old carpets and the Newark plant makes rag carpets and silk portieres in addition.

Massachusetts, New Bedford. The Quansett Spinning Company has adopted the American Moistening Company's system of humidifiers for their new mill.

Massachusetts, Newburyport. The Peabody Manufacturing Co. has leased the Victoria Mills, which have been idle for several years, to Lowell parties. The plant will be put in operation at once on cotton yarns.

Massachusetts, North Adams. It is reported that Samuel Booth, of Chester, Pa., has been here in the interest of a print works, and has been inspecting the Windsor Print Works plant.

*Massachusetts, Palmer. It is expected that the idle mill at this place will be started up about February, as the Grosvenor Mfg. Co., Chas. F. Grosvenor, manager. As soon as the capital stock, $60,000, is subscribed, active operations will begin.

*Mississippi, Wesson. John H. Fulton is president of the Mississippi Mills Company, recently incorporated to take over the Mississippi Mills; R. M. Walmsley, vice president; and Albert Baldwin, Jr., secretary and treasurer.

Minnesota, Red Lake Falls. It is reported that Claude and John Nelson of Fosston, contemplate erection of a woolen mill at this place.

New Jersey, Boonton. The Liberty Manufacturing Co. has been incorporated for purpose of making printed cloths. Among those mentioned as interested are Thomas J. Hillery and Adam Catterall.

New Jersey, Paterson. The Central Ribbon Company has been incorporated with capital stock of $100,000. Among the incorporators are C. L. Mandeville, Wm. M. Drew and E. Fisher.

New Mexico, Albuquerque. The Rio Grande Woolen Mills Co. contemplates installing knitting machinery in the plant this coming spring.

New York, Batavia. It is reported that H. E. Patrick and F. H. Dunham, the latter of Batavia, are corresponding with the Batavia Board of Trade for establishment of a knitting plant at this place.

New York, New York. J. E. Munch & Co., Inc., has been reported organized recently with capital stock of $50,000 for purpose of dyeing and printing silk. Julien E. Munch and William Herrick of New York are interested.

New York, Rochester. The L. Black Company has been reported incorporated for manufacturing cloths, with capital stock of $250,000. Louis Black, A. William Black and E. M. Gallen, of this place, are mentioned as interested.

*North Carolina, Louisburg. J. W. Hollingsworth, manufacturing all kinds of mattresses, advises us that he is about to install garnet machines, etc., for purpose of making jute bed comforts, felts, etc.

North Carolina, Rougemont. H. L. Carver and W. A. Carver are reported as considering organization of a stock company to build and operate a knitting mill at this place.

North Carolina, Waynesville. J. P. Wilson is reported as interested in erecting a cotton mill at this place.

Ohio, Cleveland. Messrs. Reinthal Bros. have consolidated their plant with that of Bamberger & Neuman. Company is operated as the Bamberger Neuman Co.

Pennsylvania, Clifton Heights. The Thos. Kent Mfg. Co. has placed a repeat order for humidifiers with the American Moistening Company of Boston, Mass.

*Pennsylvania, Harrisburg. The Lochman Bros. Silk Company has been incorporated with capital stock of $60,000, to continue the Lockman Bros. mill.

Pennsylvania, High Spire. The woolen mill at this place, formerly operated by Martin Good, has been sold.

Pennsylvania, Norristown. The Coral Manufacturing Co., with a capital of $40,000 and the following officers: George R. Kite, president; Wm. B. Montague, secretary and treasurer, and W. E.

Montague, general manager, are operating 21 broad and 14 narrow looms on art squares, bath rugs and granite carpets, which they sell direct and on which they are very busy.

Pennsylvania, Philadelphia. A charter has been applied for Robert H. Shaen, Incorporated, with the following parties as incorporators: Robert H. Shaen, Albert Streicher and Jacob S. Kob. Robert H. Shaen is well known as a manufacturer of worsted and cotton goods and has 30 broad looms in operation in the Hoyle, Harrison & Kaye Mills at Indiana Avenue and A Street.

Pennsylvania, Philadelphia. An application for a charter has been applied for by Jonathan Ring & Sons, Inc., with the following as incorporators: Elizabeth K. Ring, Charles W. Havens and Marcus D. Ring. This concern will continue the business of Jonathan Ring & Son, manufacturers of woolen and merino yarns on 7 sets located at 1759 Hancock St.

Pennsylvania, Philadelphia. The Federal Dyeing Co. has succeeded to the business of Arthur Fawell, dyer of cotton, woolen and worsted yarns at 110 Turner St. The officers of the new company are George R. Flint and John Thomson, Jr. Mr. Fawell remains with the company as superintendent.

*Pennsylvania, Philadelphia. The Empire Cloth Manufacturing Co., now established at Baker and Leverington Sts., Manayunk, are very busy on their line of fine men's wear, rain cloths and cotton worsteds, which they are selling direct. They operate 44 broad looms and use 32 to 60 two-ply worsted and 10 to 30 two-ply cotton yarns. The company has a capital of $60,000 with William Barras as president, superintendent and buyer and F. S. Harrison as treasurer. This company is manufacturing a grade of goods which it is claimed can be only made in Europe and for which they are receiving many orders.

Pennsylvania, Wilkesbarre. The Doran Lace Manufacturing Co.'s plant, closed for some time, has been sold to Geo. J. Stegmaier (Wilkesbarre) and Ambrose West (Plymouth). It is stated that the company will be reorganized and operations resumed.

Rhode Island, Centreville. The Warwick Mills have placed a large repeat order for humidifiers with the American Moistening Company, Boston, Mass.

Rhode Island, Coventry. The United Lace & Braid Mfg. Co. manufactures all kinds of beaded tip silk and mercerized laces and braids, black, white and all colors. Product is sold through John Lawrie & Son, Chicago, Ill., also direct. W. L. Preston is president of the company and C. R. Makepeace (Providence), treasurer. A dye house is attached to the mill.

*Rhode Island, Westerly. The Solway Mill Company proposes removing the mill at this place to Pawtucket about March. It is thought that the mill vacated will be utilized by the Lorraine Mfg. Co., or leased by local parties who will equip plant for manufacturing woolens.

South Carolina, Gaffney. The Globe Manufacturing Company's plant is being operated on weaving yarns, 12s, 14s and 16s 2 ply, making chain warps and skeins, with equipment of 4,000 ring and 2,000 twister spindles. The product of this mill is sold direct and through Chas. J. Webb & Co., Inc.

Tennessee, Chattanooga. The American Textile Woolen Company has been incorporated with capital stock of $1,250,000 and is a consolidation of the leading woolen mills of the South. The mills interested are: The Louisville Woolen Mills Co., Louisville, Ky.; Park Woolen Mills, Rossville, Ga.; Sweetwater Woolen Mills, Sweetwater, Tenn.; Athens Woolen Mills, Athens, Ga. The main office of the company will be located here. W. H. Nixon, of Atlanta, will probably be elected president of the company.

Personals.

J. M. Short has resigned as superintendent at Mt. Airy, N. C., and has accepted the position of shipping clerk at White Oak Mill, Greensboro, N. C.

Charles McQueen has resigned as overseer of spinning at Lockhart, S. C., to accept a similar position at Cherokee Falls.

Henry M. Wilson, from the Poe Mfg. Company, Greenville, S. C., succeeds W. D. Anderson, who resigned the superintendency of the Gainesville, Ga., Cotton Mill to accept that of the mill at New Holland, Ga.

Lee Gaddy, formerly in charge of the jacquard weave shop at Concord, N. C., is now overseer of weaving at the Odell Mill, No. 5, same place.

J. A. Walker is now boss spinner at the Buffalo Mill at Stuns, N. C., succeeding J. W. Hawk, who has gone to Cornelius, N. C., to take charge of carding and spinning at the Cornelius Cotton Mills.

John T. Abney has resigned as superintendent of mill at New Holland, to take charge of a mill at Columbus, Ga. He is succeeded at New Holland by K. D. Anderson, from Gainesville (Ga.) Cotton Mill.

W. R. Tattersall has resigned the position of superintendent at Itasca, Texas, to become superintendent of the Franklin Mills at Greers, S. C.

J. B. Foster, who has been overseer of beaming with the Charlotte Cotton Mill for several years has resigned that position. He is succeeded by J. W. Donahue, who has had charge of the slashing for several years.

C. T. Larivere, formerly employed at Pascoag, R. I., has accepted a position as overseer of dyeing for the Gloversville Knitting Company, Gloversville, N. Y.

Wm. E. Davison, superintendent of the Springfield Woolen Mills, Springfield, Ill., has accepted a position as superintendent of the Riverside Mills, Stafford, Conn. Mr. Davison was formerly employed at the Calvert Mills of Uxbridge, Mass.

John W. Jones, overseer of dressing and spooling for the Farnsworth Company, Lisbon Centre, Me., has resigned.

Harold Crossley has accepted the position as boss dyer for the Star Woolen Company, Cohoes, N. Y. He was formerly employed at the Saxonville Worsted Mills, Saxonville, Mass.

Geo. H. Bramwell, overseer of spinning for the Central Yarn Company, Central Village, Conn., has resigned. His successor is Geo. Smethurst, formerly employed at Hudson River Woolen Mills, Newburg, N. Y.

Webster M. Pike has accepted the position as overseer of dyeing for the Salts Textile Company, Norwalk, Conn. He was formerly employed at Nasonville, R. I.

Edward Downey has accepted the position as boss carder for the Atlas Linen Company, Meredith, N. H. He was formerly employed at the Baltic Mills, Enfield, N. H.

James A. Reynolds has resigned his position as superintendent of James Roy & Company, Watervliet, N. Y., to accept a position as superintendent of the worsted yarn department of the Lymansville Company, Providence, R. I.

Walter H. Langshaw, formerly agent of the Dartmouth Mills, New Bedford, Mass., was elected president and manager of that corporation at a meeting of the board of directors.

A. G. Sault, overseer of weaving at the Faulkner Mills, Stafford Springs, Ct., has again reentered the employ of the Riverside Mills, Stafford, Conn., as overseer of weaving.

Harry Smith, who has been employed at the American Mills Company, Rockville, Conn., for the past 15 years has resigned.

D. N. White, formerly employed at Dresden, Ohio, has been engaged to take charge of carding at the Hanover Woolen Mfg. Company, Hanover, Ill.

Richard Burrows of Lonsdale has accepted a position as master mechanic at the Slatersville Finishing Company, Slatersville, R. I.

James Tucker, overseer at the Niantic Mfg. Company, E. Lyme, Conn., has accepted a position as overseer of weaving at the Brookville Woolen Mills, Brookville, Pa.

John McCraig, overseer of carding at the Hargraves Mill, No. 2, has resigned and has left for the Canadian Colored Cotton Mills, Cornwall, Ont., Canada.

Frank Hay, employed in the wool shop of the Washington Mills, Lawrence, Mass., has been appointed wool buyer for a large house in Philadelphia.

R. E. Wise, formerly with Battelle, Hurd & Company has become associated with L. Bachmann & Company.

Chas. Chace, son of Clark Chace and superintendent of the Somerset Mills, Central Falls, R. I., has accepted a position as superintendent of the new Lincoln Mills.

Robert McBurney has accepted the position as overseer of dyeing at the Falls Company, Norwich, Conn. He was formerly employed at the New York Mills, N. Y.

John T. Hacking has accepted an overseer's position with the Esmond Mfg. Company, Enfield, R. I. He was formerly employed at the Avon Mills, Lewiston, Me.

John T. Duffy has been appointed master mechanic at the Clyde Print Works, Riverpoint, R. I. He will have entire charge of the mechanical and electrical department and will be assisted by his brother, Charles Duffy.

W. D. Park, overseer of weaving at the Southwark Mills Company, Philadelphia, Pa., has resigned after five years' service for this company.

Andrew J. Clark, superintendent of the Camden Knitting Mills, Camden, N. Y., has tendered his resignation to take effect January 1st. It is rumored that John Pennington, who formerly held this position, will be his successor.

Robert E. Reynolds, overseer of finishing at the Willington Woolen Mills, East Willington, Conn., has resigned.

Thos. E. Ainley, formerly employed as boss carder at Fairfield, Me., has accepted a position as superintendent of the No. 4 Mill, West Warren, Mass.

Chas. Pickles, finisher at the Concord Mfg. Company, Penacook, N. H., has resigned.

Wm. J. Jones has accepted the position as assistant overseer in the mule room of the Utica Steam Cotton Mills, Utica, N. Y.

John Fagan has been engaged as assistant superintendent and designer for the Blackstone Mfg. Company, Blackstone, Mass.

John P. Haney, manager of the Hudson Valley Knitting Mills, who are about to move their machinery to Fort Worth, Texas, is making final preparations to move the plant and has been visiting business men in Fort Worth who are interested in the concern. He is anxious to get the machinery moved as soon as possible.

Nathan Whitley has accepted the position as overseer of dressing and spooling for Holden Leonard & Company, Bennington, Vt.

Geo. A. Stevens, overseer of weaving at Haile & Frost Woolen Mills, Hinsdale, N. H., has resigned after six years of service at this mill.

Frank P. Morrison, overseer of the cloth room for the Salmon Falls Mfg. Company, Salmon Falls, N. H., has resigned. He has been succeeded by David A. Page of Amesbury, Mass.

Patrick T. Maher has accepted the position as overseer of spinning at the Bristol Mfg. Company, New Bedford, Mass. He was formerly employed at the Loraine Mills, Westerly, R. I. The help under his employ at Westerly presented him with a signet ring and a watch charm.

Onessie Maynard, overseer of finishing at the Medway Woolen Company, Medway, Mass., has accepted a position at the Bay State Mills, Lowell, Mass.

A. Wait, for several years overseer in the Boott Mills, Lowell, Mass., has severed his connection with that firm after three years' services. The employes in the room presented him with a Meerschaum pipe.

A. H. Pero has again re-entered the employ of Meek Bros. Company, Bonaparte, Ia., as overseer of finishing.

S. M. Peterson has been engaged by the Cedartown Knitting Company, Cedartown, Ga. He was formerly employed at Scranton, Pa.

Chas. Bragg, who has been superintendent of the No. 4 Mill of the Warren Cotton Mills, West Warren, Mass., has resigned and accepted a position as superintendent of the M. J. Whittall Mill, Worcester, Mass.

Chas. Elder, who has been employed as boss carder nights for the Warren Cotton Mills, West Warren, Mass., in their No. 4 mill, has resigned to accept a position as overseer of carding at the M. J. Whittall Mill, Worcester, Mass.

H. W. McKee, superintendent for the Virginia Rug & Drugget Company of Richmond, Vt., has resigned his position and returned to Philadelphia.

Geo. R. McDougall, overseer of carding at the Hudson River Woolen Mills, Newburg, N. Y., has resigned.

Dennis Duffy has accepted the position as overseer of carding for Chas. M. Davis & Co., Northfield, Vt. He was formerly employed at North Bellingham, Mass.

Wm. H. Clark has accepted the position as boss carder for James Simpson & Sons, Toronto, Ont., Canada. He was formerly employed at Housatonic, Mass.

M. D. Capeless has accepted the position as overseer of finishing for M. T. Stevens & Sons Company at their Franklin Mill, Franklin Falls, N. H. He was formerly employed at the Robinson Mill, South Windham, Me.

Everett Perkins, of Indian Orchard, Mass., has accepted the position as overseer of finishing for the Victor Mfg. Company, Clinton, Mass.

Thos. Golden, formerly second hand in the dye house at the Nashua-Valley Mills, Clinton, Mass., but more recently boss dyer at the Nashua-Valley Mills, Ashaway, R. I., has resigned.

S. J. Berkbeck, second hand at Nye & Wait's Carpet Company, Auburn, N. Y., has resigned his position and accepted a position as second hand in combing and drawing for the Victor Mfg. Company, Clinton, Mass. His help at the Nye & Wait Carpet Company presented him with a silver shaving set.

Frank Plunkett, overseer of carding at Gay Bros., Cavendish, Vt., has resigned and returned to his home in Lowell, Mass.

W. S. Scott, superintendent of the Madison Woolen Mills, who has been laid up on account of an accident which happened to him at the mill a short time ago, is now able to attend to his duties at the mill again.

J. W. Graham, superintendent of the St. Croix Cotton Mills and A. Murgall, superintendent of the dyeing department of the Canadian Colored Cotton Mills, have returned after a business engagement for the last two months from England.

Harry Howarth, second hand in the card room of the Kerr Thread Mills, Fall River, Mass., has resigned his position and accepted one as overseer in the carding department of the Hargraves No. 2 Mill. He was presented by the help in the Kerr Thread Mills with a gold watch and chain, the presentation speech being made by Daniel Allcock.

Clark B. Sanders, formerly overseer of finishing at the North Vassalboro Woolen Mills, North Vassalboro, Me., has resigned, and accepted a position at Winooski, Vt.

Daniel Beaumont, formerly superintendent of the Thayer Woolen Company, Dayville, Conn., has taken an interest in a general store at North Oxford, Mass., the mill where he was employed having closed.

Frank Peck, formerly overseer of carding at Amherst, Nova Scotia, is now in a similar position with the Pawcatuck Woolen Mills Company, Potter Hill, R. I.

Wm. Owens has accepted the position at the Harris & Company, Rockwood, Ont., Canada. He was formerly employed at Jos. Noone & Sons Company, Peterboro, Ont., Canada.

Paul G. Wetstein, formerly overseer of weaving, has accepted a position as inspector of looms with the Crompton-Thayer Loom Co. of Worcester, Mass.

Thomas Duffy has accepted the position as overseer of carding for the Briggs Mfg. Company, Voluntown, Conn. He was formerly employed at the Otis Mill, Ware, Mass.

John Jones has accepted the position as overseer of dressing for the Oakland Mfg. Company, Sykesville, Md. He was formerly employed at the Farnsworth Co.'s mill, Lisbon Centre, Me.

J. Porter Harrington superintendent of the Saratoga Victory Mfg. Company, Schuyerville, N. Y., has resigned to become assistant manager of the Nashua Mfg. Company, Nashua, N. H.

Harry Richardson, assistant foreman of the carding department at the Ann & Hope Mills, Lonsdale, R. I., has accepted a position as overseer of carding at the Peabody Mfg. Company, Newburyport, Mass.

Louis Levesque, for the past eight years foreman of the frame spinning, warping, spooling and slashing department at the Arctic Mills, Centreville, R. I., has resigned and accepted a position at the Coventry Company's Mill at Anthony, R. I. He will be succeeded at the Arctic Mills by Wm. H. King, who was foreman at Anthony.

Wm. Smith, boss dyer and washer at the Empire Mills, Stittville, N. Y., for the past ten years, has resigned and accepted a similar position at W. C. Atwood's, a new mill which will begin operation about January 1st.

Chas. F. Nichols of Cherryfield Village, Me., has become secretary and treasurer of the Saxony Knit Goods Company, Seattle, Washington. This concern has recently begun operation at Seattle, having formerly done business at San Francisco, Cal.

Carl MacDougall has accepted the position as second hand in the combing department at the Fulton Worsted Company, Fulton, N. Y.

Mr. Martin Flanagan, overseer of the mule room at the Arctic Mills, Centreville, R. I., has severed his connection with that concern.

Wm. Schofield, who has been employed in the weaving department at the Earnscliffe Mills, Olneyville, R. I., has resigned to accept a position as overseer of weaving under superintendent Wm. H. Rider at Clinton, Mass.

Mathew Conlan, formerly overseer at the Butler Mills, New Bedford, Mass., was given a surprise by about seventy-five of the employes of the Butler Mills, who presented him with a gold ring, gold cuff links and studs to match. Walter Hatfield made the presentation speech. Mr. Conlan will sail for Europe shortly.

Robert McBurney, who two years ago left the Falls Mills, Norwich, Conn., to accept a position at New York Mills, N. Y., has returned and accepted the position as overseer of dyeing for the Falls Mills. E. C. Hilton, formerly with Levinstein & Company, where he has held the position as assistant chemist, is second hand under Mr. McBurney.

Fred Bengle has accepted the position as second hand in the card room of the Thorndike Mills, Thorndike, Mass. He was formerly employed in the Palmer Mills, Three Rivers, Mass.

Geo. Cummings, overseer of the knitting department of the Tivoli Mills, Cohoes, N. Y., has resigned to accept a position at the Empire Mills.

J. J. Driscoll, formerly overseer of carding at Hamden, Mass., has accepted a position at Curtiss & Youland's, Wegatchie, N. Y.

John J. Brouder has been engaged as assistant designer at the Wood Worsted Mills, Lawrence, Mass. He was formerly loom fixer at the Arlington Mills.

John Keefe, overseer of dyeing at the Indian Spring Woolen Company, Madison, Me., for a number of years, has accepted a position as overseer of dyeing for the Clinton Woolen Mfg. Company, Clinton, Mich.

Harry Davenport has accepted the position as overseer of dyeing at the Buell Mfg. Company, St. Joseph, Mo. E. A. Jones has accepted the position as overseer of carding for this company.

Geo. Garlick has accepted the position as overseer of carding for the Hygienic Fibre Company, Greenville, R. I. He was formerly employed at Fall River, Mass.

Robert E. Reynolds, of East Dedham, Mass., has accepted the position as overseer of wet finishing for the Germania Mills, Holyoke, Mass.

A. P. Foster, who has held the position as overseer of spinning at the Indian Spring Mills, Madison, Me., for a number of years, has accepted the position as overseer of spinning at C. B. Alling Company, Derby, Conn.

W. M. Cameron has accepted the position with M. H. Marcus & Bro., East Killingly, Conn., as overseer of dyeing and bleaching. He was formerly employed at the Oneko Mills, New Bedford, Mass.

Francis G. Cuttle, superintendent of the dyeing and finishing department of the Mankato Mills Company, Mankato, Minn., manufacturers of wool half hose, has resigned his position after being employed for this company for three years.

James Levins has accepted the position as overseer of weaving and designing for T. F. Mullen & Company of Stafford Springs, Conn. He was formerly employed at Somerville, N. J.

James J. Ryan has accepted the position as overseer of finishing for the Kent Woolen Mills, Jamesville, Mass. He was formerly employed at the Pondville Woolen Mills, Auburn, Mass.

Frank Dickson, employed at the Beaver Brook Mills, Collinsville, Mass., was pleasantly surprised at his home recently by the help employed in his department, who presented him with a writing desk and a book case.

Donart Demars, who has been employed at the Goodall Worsted Company, Biddeford, Me., has resigned to accept a position for the new Drug Company of that town.

Dennis Duffy, overseer of carding for Chas. M. Davis & Company, Northfield, Vt., has been succeeded by Harry Balcomb of Troy, N. Y.

Geo. A. Stevens, superintendent of the weaving department at Haile & Frost's Mill for over six years, has resigned his position with this company.

Councilman W. W. Edwards, of Franklin Falls, N. H., has succeeded John Currier as assistant superintendent of the Franklin Mills, Mr. Currier having transferred to the M. T. Stevens & Sons Mill at Haverhill, Mass. Michael Capeless of Pittsfield succeeded W. W. Edwards as overseer of finishing.

Wm. H. King, overseer of frame spinning at the Anthony Mills for the past nine years, severed his connection with that mill on Saturday, December 15. He is to take a similar position with the Arctic Mills, Riverpoint, R. I. As a token of esteem and signifying the regret felt at his departure, Mr. King was given a handsome Morris chair from the employes in several departments under his care. Morris Gorton acted as spokesman for his fellow workmen.

Geo. R. Harrington, machinist for the Warren Woolen Company, Stafford Springs, Conn., has resigned and accepted a position at Putnam, Conn.

Edward M. Lynch, overseer of weaving for the Stevens Mfg. Company, Fall River, Mass., will succeed Benjamin Reed as superintendent of this mill when Mr. Reed retires to assume the treasurership of the new Lincoln Mill.

Napoleon Herbert, overseer of the reeling and spooling department of the Anchor Mills, American Woolen Company, Graniteville, R. I., severed his connection with that concern Saturday, December 22. Just before the closing hour, the employes in the department in which he had charge

presented him with a diamond ring, presentation speech being made by Miss Louise Auger. Mr. Herbert was taken completely by surprise but responded in a few chosen words. He is to enter in business in Holyoke, Mass.

John Mannion, overseer of the card room at the Stevens Mill, Fall River, Mass., has accepted the position as superintendent of the same mill.

John Pennington has resigned his position as superintendent of the Camden Knitting Mills.

Phillip Sime, overseer of carding at the Renfrew Mills, with his son as his assistant, has resigned his position. Mr. Sime has been connected with the Renfrew Company of Adams, Mass., for thirty-two years.

Henry M. Wilson, formerly with the Poe Mfg. Company of Greenville, S. C., has been appointed superintendent of the Gainesville Cotton Mills, Gainesville, Ga.

Archibald W. Scott, superintendent of the Plainfield Woolen Company, Central Village, Conn., has tendered his resignation, to take effect January 15.

Michael McCurn, formerly employed at North Oxford, Mass., has accepted a position as overseer of carding at the Enfield Woolen Company, Enfield, Mass.

Napoleon Goyette has accepted a position as overseer of the cloth room at the Danielson Cotton Mills, Danielson, Conn. He was formerly employed at Natick, R. I.

Deaths.

John Aspinwall died December 10, at Providence, R. I., aged 71 years. He was born in Stockport, England, and came to this country when six years of age. He was a civil war veteran. After the war, he removed to Connecticut and then came to Rhode Island to become superintendent of the Harris Mfg. Company's Mill.

John Wolfe, aged 4 years, died at Beacon Falls, Conn. He was in the woolen business in Broad Brook, Conn., for a number of years. In 1863, he became superintendent of the Home Woolen Company at Beacon Falls, Conn. In 1879, Mr. Wolfe became owner of the concern and manufactured woolen shawls, with 300 hands employed. He retired in 1885.

Edward B. Milliken died at his home in Nashua, N. H. He was born in Mechanics Falls, Me., Sept. 23, 1827. He came to Nashua when 27 years of age and started in the dye works of the Nashua Mfg. Company. He later became superintendent and held the position until a short time ago when he was taken ill. He went to a sanitarium at Franklin but returned unimproved. He was a member of the Odd Fellows and Red Men.

Chas. Salmon, president of the Keystone Spinning Company, Philadelphia, Pa., was stricken with apoplexy at the Reading Terminal Station of that city, Thursday evening, December 13th, and died without recovering consciousness.

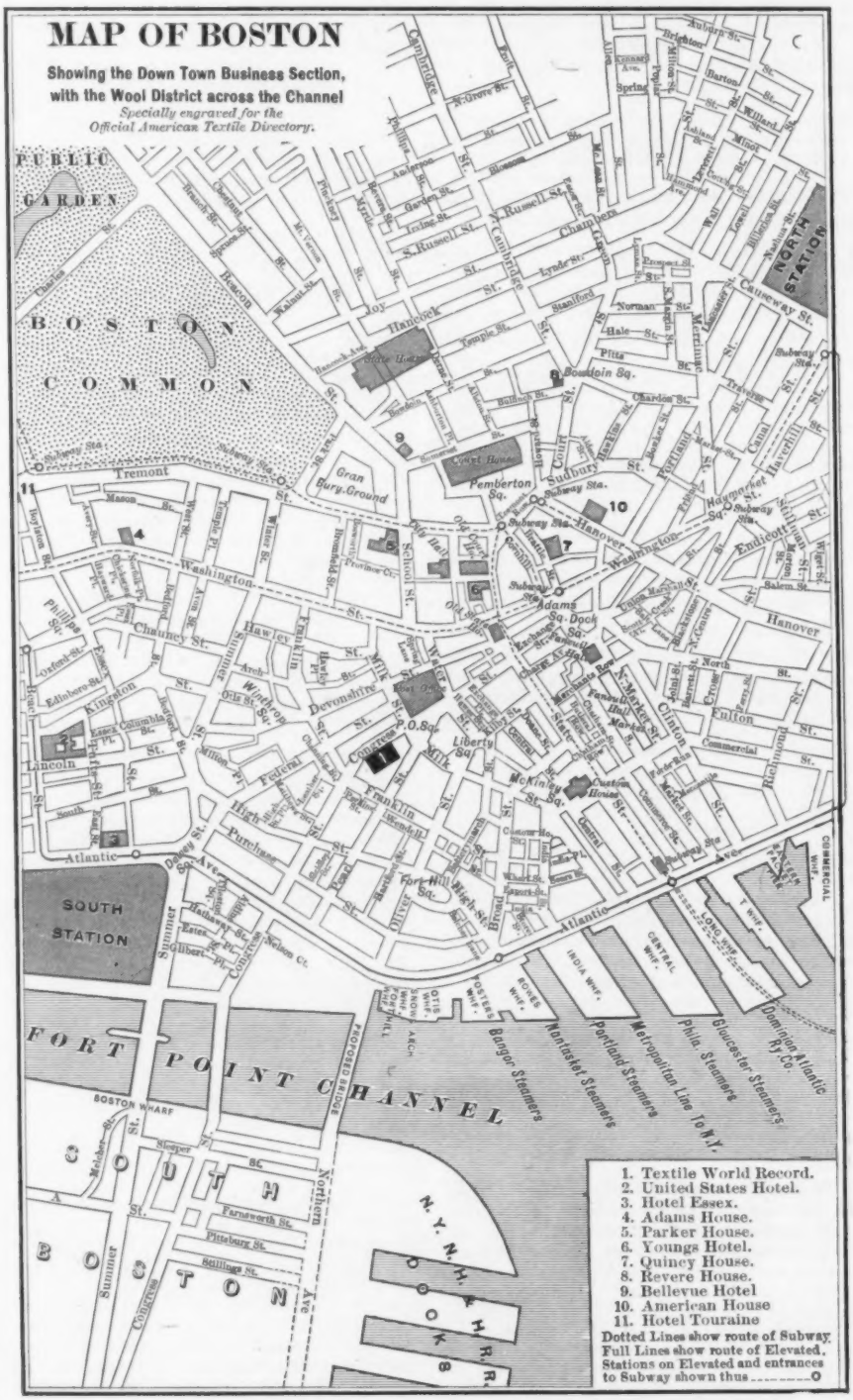
Sam Sills, superintendent of the British Hosiery Company, Thornton, R. I., was taken ill at the mill Wednesday, December 12th, and died later at his home on Thornton Ave. The funeral was held Sunday, the 16th, at the church of the Holy Nativity and the burial was at Pocasset. He was superintendent of the mill for about twenty years.

Austin Walker, president of the Star Knitting Mills, Grand Rapids, Mich., died Monday, November 17, at his home, 404 Madison Ave., at the age of 81 years. The deceased came to Michigan in 1860 and settled in Niles, where he engaged in business until 1884, when he began the manufacture of knit underwear, continuing in that business until 1892, when he removed to this city, where he became actively identified with the Star Works, being head executive of that establishment at the time of his death. Being one of the pioneer manufacturers of underwear in Michigan, he was well and favorably known in many states throughout the union. He is survived by a son and three daughters. The funeral was held on Wednesday at 10 o'clock from his late residence. Interment was at Niles.

Thomas Windle died at his home in West Millbury, Mass., on Monday, December 24, aged 61 years. He was widely known as a woolen manufacturer and a veteran of the civil war. He had lived in Millbury for more than twenty-six years. Death was due to heart failure. He leaves a widow, two sons and a daughter.

Wm. Elizur Tillotson, aged 64 years, one of the leading woolen manufacturers of Berkshire, died at his home in Pittsfield, Mass., November 30th, his death resulting from a stroke of apoplexy. He suffered a similar shock in New York City in the spring of 1904, but rallied and in a great measure regained his health. He was born in Granville, Mass., November 16, 1842. His first business experience was obtained in Pittsfield. In 1867, he moved to Chicago and engaged in the stove business with his brother, later being engaged in the real estate business. In 1873, the death of his oldest brother recalled him to Pittsfield to take charge of the woolen business which his brother had established. He took a great interest in the business and greatly developed it. In 1889, he built a new mill at Silverlake. He was a shrewd business man and kept his mills running through all of the business depressions which were so disastrous at times for the woolen industry. His fortune is estimated at $1,000,000.

Edward Hargraves, a prominent woolen manufacturer, identified with mills in Maine and New Hampshire, died at his home in Somersworth at the age of 69. For many years he operated the mills at No. Shayleigh started by his father and was also treasurer for some time of the Great Falls Woolen Company and the Saco River Woolen Company and was director in many other business enterprises in that section. Mr. Hargraves was born in England and came to this country at an early age.



THIS MAP SHOWS THE LOCATION OF THE NEW EDITORIAL AND BUSINESS OFFICES OF THE TEXTILE WORLD RECORD AND LORD & NAGLE CO.—OCCUPYING THE FOURTH FLOOR OF THE MORRILL BUILDING 144 TO 150 CONGRESS ST., BOSTON—MARKED 1 ON MAP.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Water Softening and Treatment; by William H. Booth; 303 pages, 5 1/2 by 8 1/2; D. Van Nostrand Company, New York. Price $2.50.

This work is devoted to the treatment of water for industrial purposes. The first part of the book deals with the softening and filtration of water and the separation of oil. The second part contains an account of air pumps, condensers and circular pumps. The third part deals with feed heating, stage heating and the generation of steam. In the fourth section is an account of water cooling and the last section is devoted to feed pumps and injectors.

Exporters' Encyclopedia, 1907; 650 pages, 5 1/2 by 8; Exporters' Encyclopedia Co., New York City. Price, including monthly supplements, $5.00.

A large amount of valuable information for merchants in the foreign trade is contained in this volume. It gives the addresses of the steam and sail transportation companies from the different American cities, classified according to the countries of destination, also every port of call, points where bills of lading may be obtained, lists of the leading inland cities and towns, with directions how they can best be reached. The book gives directions regarding consular documents, and fac similes, with English translation, of consular invoices. It shows how to pack, mark, ship, insure, and consign goods and altogether forms a handbook that no exporter can afford to neglect.

Cyclopedia of Textile Work; 7 vols., half morocco; American School of Correspondence, Chicago, Ill. Price $24.00.

This work is compiled from the textile instruction papers of the American School of Correspondence and is intended as a course of instruction in textile manufacturing for those who cannot take the regular correspondence course. Vol. I contains the papers on cotton spinning, including an account of the fiber and the preparatory processes, carding, combing and drawing. Vol. II treats of woolen and worsted spinning and includes chapters on the wool fiber and also on the preparatory and intermediate processes. Textile Design is the subject of Vol. III, which treats of harness and jacquard weaving, leno designing and the weaving of pile fabrics. A useful chapter on cost finding is added. Vol. IV is devoted to warp preparation and the mechanical processes of weaving together with a chapter on weave room calculations. Vol. V contains papers on knitting, including hosiery and underwear on both circular and flat machines. There is also a chapter on finishing knit goods. Vol. VI treats of textile chemistry and dyeing, to which are added chapters on textile calculations and cloth analysis. Woolen and worsted finishing is the subject of Vol. VII.

All the papers are illustrated with many excellent diagrams and half tone engravings. To each series of papers is added a list of questions relating to the subject matter. In the last volume is a general index which enables quick reference to be made to any subject desired. These seven volumes form a textile cyclopedia of great value not only for self instruction, but as a work of reference. The work is sold at the price given, payment to be made in monthly instalments of $2.00 each. This makes it easy for the mill worker to pay for the work and it must be a very poor student indeed who will fail to get far more than his money's worth of instruction while paying for this textile cyclopedia.

Various Processes of Finishing for Carded Woolen, Worsted, Cheviot and Half-Wool Goods (Appreturverfahren der Streichgarn, Kammgarn, und Cheviotstoffe, und der halbwollenen Waren); by W. Jansen; 285 pages; Hausdorff & Co., Leipzig, Germany. Price $1.75.

The difficulty of describing accurately the processes of finishing wool, worsted and mixed goods accounts for the lack of literature on the subject. How is a woolen fabric finished, is a question that can be answered exactly only in the finishing room where the goods are finished. A great deal of valuable information, however, can be given in written form. It is to this task that the author of this book has applied himself. The different subjects are considered in the following order: Finishing half wool goods; sizing; finishing presidents; blankets; flannels; woolen cheviots; meltons; friezes; waterproofing; army goods; piece dyed goods; billiard cloth; white woolen goods; ladies' dress goods; velvet finish; castors and doeskins; kerseys; elastic army cloth; tricots; chinchillas; montenacs; mohair fabrics; piece dyed woolens.

The work cannot fail to convey many valuable hints to the practical finisher. The contents are arranged and indexed so that ready reference can be made to any subject. The text is in German.

Organization and Management of a Woolen Mill (Organisation und Betrieb einer Tuchfabrik); by Dr. Hugo Ephraim; 61 pages, 6 by 9; H. Laupp'sche Buchhandlung, Tubingen, Germany. Price 50 cents.

This is a reprint of an article that originally appeared in Zeitschrift fuer die gesamte Staatswissenschaft, and gives a general account of the organization and management of a German woolen mill. It deals more with theory than practice, but contains many useful suggestions to textile manufacturers. The text is in German.

Woolen and Other Warehousemen's Accounts; by John Mackie; 69 pages, 5 1/2 by 8 1/2; Gee & Co., London, England. Price 75 cents.

The author of this book outlines a system of warehouse accounts adapted for the English trade. It contains numerous forms filled out to represent actual transactions. After the introduction comes a chapter on Warehouse Books, followed by a section on Books Used in Counting Houses, the work concluding with a chapter on Occasional Books for Statistics.

Business Literature.

New Process Noiseless Pinions; The New Process Raw Hide Co., Syracuse, N. Y.

A new catalogue containing an illustrated description of most of the different styles of gears manufactured by this company. It also gives much information in regard to the "New Process" noiseless pinions and the method of treating the hide used in their manufacture. Besides a list of some of the users of the "New Process" pinions the catalogue contains directions for ordering the pinions, also a price list of the different sizes.

Bulletin of the American School of Correspondense, Chicago, Ill.

The quarterly issue of this publication contains a large amount of information concerning the courses taught and the methods of instruction, a list of the text-book writers and instructors, and a synopsis of the various courses. The department of textile manufacturing, giving instruction in woolen, worsted, cotton and knit goods manufacture, warp preparation, designing, textile chemistry and dyeing, is especially complete, and will undoubtedly be found of great value by those who cannot avail themselves of the privileges of a resident school. The bulletin is illustrated with many excellent engravings and has also a list of graduates with their present addresses as far as known.

Calendars for 1907.

Thomas Wolstenholme Sons & Co., manufacturers of French and Bradford spun yarns, Frankford Avenue and Westmoreland Street, Philadelphia, Pa.

A large wall pad, 22 by 14 inches, with a leaf for each day of the year.

Thomas H. Ball, dealer in worsted yarns, 15 South Third Street, Philadelphia, Pa.

A large sized lithographed calendar for office use.

West Warren Thread Works, Westfield, Mass.

A dainty desk calendar with an attractive picture of "Louise."

Hartford Fire Insurance Co., Hartford, Conn.

A plain business-like calendar for office use in black and white, sent out by the Boston agent, Thomas W. Penhallow, Exchange Building.

Speed & Stephenson, Boston, Mass.

A particularly handsome wall calendar, suitable for the library or office, is being distributed among the friends of Speed & Stephenson, dealers in textile machinery and supplies, at 170 Summer Street.

Sturtevant economizers are being installed by the Burgess Mills, Pawtucket, R. I.; The Champion Fibre Co., Canton, N. C., and J. B. King Co., Staten Island, N. Y. In connection with the first named the B. F. Sturtevant Co., of Boston, Mass., is furnishing a dual system of mechanical draft consisting of a fan for forcing air beneath the grate and another for exhausting gases from the furnace.

A Successful Yarn Dyeing Machine.

The best proof of the merit of a machine is found when a manufacturer tests one machine in his mill and then orders more of them. This is what has occurred repeatedly in the case of the yarn dyeing machine introduced by L. H. A. Schwartz & Co., 141 Milk Street, Boston, Mass. A large number of first and repeat orders have recently been received. This machine is well adapted for all colors, including sulphur black. The yarn is dyed on spools, thus dispensing with reeling and rewinding, as with skein dyeing. The Schwartz machine deserves the careful attention of all yarn dyers, and especially of knit goods manufacturers.

Home Again.

A. W. Buhlmann, of Philadelphia, returned last month from an extensive tour of Europe, covering a period of seven months, during which time he visited every textile centre of importance in France, Germany, Switzerland and Italy. The prime object of Mr. Buhlmann was the study of the latest devices of textile machinery, especially those which apply to finishing. He has reopened his office at 1618 Diamond Street, Philadelphia, and has every equipment in point of models and descriptive matter regarding his lines, which those who are interested may desire. He is sole representative in the United States and Canada for the Herm. Schroers Maschinenfabrik.

Textile Education.

The association at North Adams, Mass., was among the first of the Young Men's Christian Associations to give instruction in textiles in their courses. This branch of their work is in a promising condition and the number of students is constantly increasing. On December 28 a lecture on textile education was given before the students by Christopher P. Brooks, principal of the school of textiles in the International Correspondence Schools.

Notice of Removal.

We wish to advise our many friends and patrons that on and after January 1, 1907, our Southern office, now located in Atlanta, Ga., will be established in Charlotte, N. C., in the Trust Building, Room 405, where all communications intended for our Southern representative, Mr. J. S. Cothran, should be addressed.

We desire to take this opportunity to extend our sincere thanks to the many clients whom we have had the honor of serving, and we trust that in our new location the confidence we have so long enjoyed may be continued.

Yours respectfully,
American Moistening Company,
Frank B. Comins,
Vice-Pres. and Treas.

Boston, January 1, 1907.

Fire Insurance.

The general prosperity of a community is closely connected with the ability and willingness of fire insurance companies to adjust fire losses promptly and indemnify the property owners. The small as well as the large property owner is affected by the interruption to commerce that follows the destruction by fire of a manufacturing or commercial establishment. The destruction of several such establishments in any one community would have more effect than the loss of a single plant, while a conflagration causing the total destruction of property, approximating $300,000,000, as at San Francisco, affects the business interests of the whole country. The resulting disturbance and loss are greatly increased by the inability of a number of fire insurance companies to pay their conflagration losses. The ability and willingness of the Home Insurance Company of New York, the leading and strongest company, to meet its obligations promptly, is well set forth in the following article from a recent issue of the San Francisco Emanu-el:

"The people of San Francisco owe a debt to the Home Insurance Company of New York of such magnitude that they never can repay it during the life time of those who were benefited by the action of this Company directly after the fire. In fact the Home will forever remain an important part of the history of New San Francisco, inasmuch as it was this Company above all others that made the rebuilding of the city possible. Its prompt action gave the people of the stricken city heart and brought cheer out of gloom. Furthermore, it gave the people throughout the commercial world of this country an unshaken confidence in the insurance companies doing business all over the land.

"The fire, as all know, broke out on the morning of April 18. During that week and the following week all of San Francisco was busy endeavoring to find homes, and it was the second week after the fire before men commenced to take up the threads of business. The Monday morning of that week all business was temporarily transferred to Oakland. On that morning Elbridge G. Snow, the president of the Home, telegraphed from New York to its general agent, Harry L. Roff, that the Company would pay its losses, amounting to nearly $4,000,000, in full. Immediately R. H. Magill, the Oakland agent, swung a banner out on to Broadway of that city announcing the contents of Mr. Snow's telegram.

"The people at that time were wondering what the insurance companies would do. In fact, they were almost disheartened, but here came good news and they began to take hope. Immediately the other agents became busy telegraphing to their home offices, with the result that within a week thirty-five companies, with nearly $100,000,000 of liabilities, announced that they, too, would pay in full, and before the time for filing proofs of loss had lapsed twenty-six more companies with $40,000,000 of liabilities had concluded to do likewise. Not only did this splendid action of Mr. Snow's save the situation in San Francisco, but there are many who believe that the situation in Wall Street was so unsettled owing to the expectation of a sudden dumping of several hundred millions of securities on the market, that this action probably averted a national panic as well. If, then, the Home is singled out for special praise it is no more than it deserves.

"Mr. Correa, the vice president of the Company, has just returned East after having spent two weeks looking over the present situation in San Francisco. He is a very modest and unassuming gentleman, and a keen observer. Speaking of his visit to this city he said: 'I am very much gratified at the reception that I have received in San Francisco, and have been the recipient of many encomiums for our Company. All that I care to say about what the Home did is that the action of the Company speaks for itself, and we will let the past be a guide to the future. We simply paid what we owed, as every honest debtor ought to do. Your people, when they took a policy in the Home, paid for something first-class, and we in turn gave them the assurance that they did.'"

TheYale & Towne Plan of Raising Wages.

Henry R. Towne, president of the Yale & Towne Mfg. Company, Stamford, Conn., at a meeting of its superintendents and foremen held recently, made announcement of an increase of wages and piece rates, to its 3000 employees, which is of much interest.

Each individual rate will be reviewed, and, where necessary, adjusted, due allowance being made for advances which have already occurred since December 1, 1905. The latter aggregate about $45,000 per annum, and those now proposed will aggregate approximately $75,000, making a grand total of $120,000 per annum to be distributed among the employees by changes in day rates and piece rates.

This action is voluntary on the part of the company, and is intended as a recognition of the industrial conditions now prevailing. The company aims always to pay rates that are at least as high as those generally current for each class of labor, skilled and unskilled, and believes that its liberal policy in these respects is appreciated and will result in increased efficiency, and, therefore, in greater economy. It proposes to ascertain in this way if the policy thus indicated constitutes "good business."

Textile Soaps.

The Nicetown Manufacturing Co., Nicetown, Philadelphia, Pa., manufacture all kinds of textile soaps, including potash soap for wool scouring, fulling and scouring soap for cloth finishing, a special soap for spindle bands, soap powder for bleacheries to be used in connection with white chip soap, and softeners for knit goods. Within the last two years the business of the firm has increased to such an extent that they have been obliged to enlarge their plant twice, a fact that speaks well for the popularity of their products. They have an especially neat Christmas souvenir in the form of a card case that they are distributing to their friends and customers in the textile trade.

Cotton Bales at Manchester Docks.

An American textile journalist once told us that cotton was landed in Manchester in a condition that would "disgrace a Hottentot." It was no exaggeration. A visit to the Ship Canal docks at present (writes a representative of The Textile Mercury), to witness the arrival of a cargo of cotton from the United States, is quite sufficient to prove that the cotton farmer is no artist at "parceling-up" his own material. How far his ignorance of and his indifference to the damage done to the texture of the delicate fibres thus operates, perhaps never strikes him for a moment. And, as a matter of fact, what does he care, so long as he knows that we must have his product, somehow or anyhow? As far as the baling is concerned, we have got to accept it, "anyhow."

"Isn't it awful?" said a man at the docks, as he saw the writer surveying a pile of bales that had just been thrown under a shed on the quay side. "One would think," he continued, "that the Lancashire spinners would look after their own interests better than they do;—fancy allowing cotton to be landed in such a condition! But so long as they can make a profit on it they dunnat care a hang!" Quite so! Yet they do not always make a profit. When that is the case they "set to" and discuss ways and means of bringing about better methods of baling, shipping, etc., until another good time comes round; then, as the dock foreman says, "they dunnat care a hang."

From the state in which the bales are landed, it would be impossible to say how many iron "hoops" or "ties" it is customary to use for each bale. It is almost impossible to say whether it was ever intended that the jute "bagging" should completely cover the cotton. In some instances the whole of the end of a bale is exposed; in other instances both ends will be uncovered; or the whole of one side will be open, while the bagging will have been torn and cut away in other places. It is, indeed, an exception to find an undamaged covering; and equally so to say how many times the bagging has been used for the same purpose, how many times sewn and patched. It is, however, fair to say that the patches are of better material than the rest of the covering, and act as a greater protection to the cotton. In fact, the cotton is so indifferently baled, so indifferently shipped, so indifferently carted about, that a habit of carelessness and thoughtlessness "grows upon" those who have to handle it in the course of it being moved from place to place. For example, a laborer was seen to wipe his muddy boots on the top of one bale where the "fleece" was exposed. Assuming an air of authority, our representative asked him why he was doing that. He touched his cap, and merely said, "It's only cotton, sir!"

Well, with about 70 per cent. of the cotton only partially covered with "bagging"—itself poor enough in the best of instances—it is difficult to say what happens to the staples as they are hauled and mauled about. Laborers jump on them, dance on them, wipe their muddy boots on them; and large hooks and bars are plunged into them. The raw material bulges from all sides and ends and corners of the bales; and at the docks, and on the road to the mills, the wind scatters their contents heedless of their value. Bales made up at any rag-sorting establishment are models of neatness compared to the American samples of baling.—Textile Mercury.

Finishing and Sizing Compounds.

The Arabol Manufacturing Co., 100 William St., New York, are among the largest manufacturers of starches, sizing compounds, softening oils and softeners. They are well equipped for producing modern compounds based upon the best practical experience and scientific methods. The most satisfactory service will be obtained by manufacturers if, when ordering, they will give full explanations as to the class of goods used, the kind of "feel" desired, and the degree of hardness or softness of the water; in short, the particular conditions of manufacturing.

A Busy Plant.

The Schuylkill Haven (Pa.) Bleach and Dye Works, handling yarns and knit goods in the piece, are being worked to their fullest capacity. Samuel Rowland, the manager and proprietor, states that the drying apparatus is to be increased to double its present size and that vacuum dyeing machines for the dyeing of yarn on cones and in skeins will be added shortly to the equipment.

New Municipal Lighting Plant at Brookhaven, Miss.

The town of Brookhaven, Miss., has recently awarded contracts for a new municipal lighting plant consisting of one 220 KW. and 100 KW. alternating current generators to furnish lighting and power for the street lights, etc. The contract for the generators was secured by the Crocker-Wheeler Company of Ampere, N. J. The ratings of these machines, which are to be furnished, are as follows:

One 220 KW. engine type alternating current generator, 3 phase, 60 cycle, 2,300 volts, 200 r.p.m. and 1 100 KW. belt type alternating current generator, 3 phase, 60 cycle, 2,300 volts, 700 r.p.m. A 13 KW. generator is to be furnished as exciter for the belt type generator. This will give the plant a capacity of 300 KW. alternating current.

"Eze" Wax.

The Purine Manufacturing Co., chemists, of Reading, Pa., are the patentees and manufacturers of "Eze" wax for hosiery boards. It saves not only the boards from wear and tear, but also the operators from labor and worry. They also state that it is the only liquid wax in America, and that it will wax one dozen boards in three minutes, positively filling every pore in the wood. The company will be pleased to send by express prepaid to any one desiring to try "Eze" wax a sample gallon, on receipt of $1.50. The company feel sure that after once using it a manufacturer will never be without it.

Vice President of the Yale & Towne Manufacturing Co.

At a meeting of the stockholders of The Yale & Towne Mfg. Co., held at its offices here recently, Frank H. Taylor was unanimously elected a director of the company, and at a subsequent meeting of the Board of Directors, held on the same day, was elected a vice president of the company.

Mr. Taylor was born in Cincinnati, O., and after leaving school entered Haverford College (near Philadelphia), where he graduated after a four years' course; immediately afterward he entered Harvard University, from which he also graduated, in the class of 1877, receiving the degree of A. B.

After leaving college, Mr. Taylor entered the employ of the Geo. Fox Starch Co. of Cincinnati, O., as an apprentice, advancing through various stages to the position of superintendent. In 1882 he moved to Philadelphia, where he became one of the organizers, and then treasurer, of the Belmont Iron Co., of which ultimately he became the president. The plant of the company having been destroyed by fire, Mr. Taylor, in 1890, accepted the position of manager of the Philadelphia branch house of The Yale & Towne Mfg. Co., which he retained for the following seven years.

In 1897 he transferred his residence to Pittsburg, Pa., to accept an appointment as sales manager of the Westinghouse Electric & Mfg. Co. He served three years in this position, and was then promoted to the position of fourth vice president, in which he served for about three years, and finally was elected to position of second vice president, which he filled for the following three years, and until he resigned in April, 1906. He is a director of the Westinghouse Electric & Mfg. Co., and of the Provident Life and Trust Co. of Philadelphia, and one of the trustees of the Engineers' Club of New York.

As a vice president of The Yale & Towne Mfg. Co.. Mr. Taylor's duties will relate equally to the manufacturing and commercial sides of the business, and ultimately will include many of the matters which heretofore have been attended to by the president.

The present official organization of The Yale & Towne Mfg. Co. is as follows, viz: President, Henry R. Towne; vice presidents, Schuyler Merritt, Frank H. Taylor; secretary, J. H. Towne; treasurer, A. R. Erskine; general manager, Kirk Brown; general superintendent, Walter C. Allen.

Wood Rolls for Finishing Machinery.

Frank Bailey, Cedar Brook P. O., N. J., with works at Braddock, reports good business in his new department of wood rolls for finishing machinery. He knows the requirements, and from his experience in finishing dye sticks, knows how to satisfy the requirements. These rolls are finished perfectly smooth or with shellac finish as desired. He makes them of any diameter, length or kind of wood; rounded, flat or square ends; with cold rolled steel gudgeons, or square shaft all through. Quick delivery, first-class work and right prices are what he aims for.

New Knitting Machine Agency.

E. O. Spindler, 350 Broadway, New York, has recently returned from Europe, where he made arrangements for the American agency for Kari Lieberknecht, Oberlungwitz, Saxony, a prominent German builder of full fashioned cotton system machinery. This make of machinery is in extentive use by German hosiery manufacturers of the finer grades of goods, particularly those making silk and fancy hosiery. Some machines are already in this country and are reported as giving much satisfaction. Mr. Spindler will be pleased to give full information as to prices, deliveries, etc., upon application.

Charles T. Main, the Mill Engineer, Opens a New Office.

On January 1 the firm of Dean & Main, engineers, was dissolved. Chas. T. Main will open a new office about February 1 in rooms 907-913, International Trust Company Building, 45 Milk street, Boston, Mass., for the purpose of continuing his work as consulting and designing engineer for textile mills and other industrial plants.

Mr. Main has had a wide experience in the construction, reorganization and management of textile mills, having spent about a year as draftsman at the Manchester Mills, five years as engineer, one year as assistant superintendent and five years as superintendent of the lower Pacific Mills, and fifteen years in general engineering practice. During this period he has designed, remodeled or reorganized a large number of plants in part or in whole, including the buildings, power plants and machinery. Some of these plants have been very large, the largest and latest being the Wood Worsted Mills, Lawrence, Mass., in which the floor space is about 1,900,000 square feet.

During the last few years Mr. Main has made a large number of examinations, reports and designs for the development of water powers for electrical transmission and has been consulting engineer on other developments, and is now serving on two boards of consulting engineers on large developments. This work has been scattered all over the United States, in Mexico and Canada.

He is also often called upon to place values upon properties for sale, purchase, rental, taxes, insurance, and in condemnation proceedings, and is now serving on a board of referees in a water case.

Mr. Main intends to carry on the above line of work and has secured commodious offices, which will enable him to turn out a large amount of work promptly. Henry A. Herrick and F. B. Coe, who have been chief assistants for Dean & Main, will continue in this capactiy for Mr. Main.

The Textile Machine Works at Wyomissing, Pa., are very busy on their full fashion knitting machines and have a number of orders on hand. To increase their facilities they are building a new foundry which will be a one-story brick and steel structure, 100 by 200 feet.

Final Decision in Important Fire Hose Suit.

The Court of Errors & Appeals, Trenton, N. J., has unanimously sustained the decision of infringement of corporate name and trade-marks and permanent injunction issued by Chancellor Emery last February in suit brought by the Eureka Fire Hose Company of New York against the Eureka Rubber Manufacturing Company of New Jersey.

This is the highest court of resort to which the matter can be taken and the decision, which is an important one, is final.

This case has attracted considerable attention among fire departments and fire supplies dealers and it is now settled that using the word "Eureka" as part of a business title in connection with the manufacturing and trading of rubber lined cotton fire hose and other similar manufactures of the Eureka Fire Hose Company is illegal.

National Association of Hosiery Manufacturers.

The secretary and treasurer of this association, C. B. Carter, announces that the membership has been increased to 144 by the addition of the following-named firms:

High Point Hosiery Mills, High Point, N. C.; Orion Knitting Mills, Kinston, N. C.; Yadkin Knitting Mills, Lexington, N. C.; Statesville Knitting Co., Statesville, N. C.; Carolina Mills Co., Winston-Salem, N. C.; D. F. Kelchner, Fleetwood, Pa.; Harvey E. Funk, Huntingdon, Pa.; Keen & Kniley, Lykens, Pa.; E. Schott Estate, Mifflintown, Pa.; Thompson Bros., Milroy, Pa.; Gem Hosiery Co., Mohnton, Pa.; Industrial Hosiery Mills, Mohnton, Pa.; Wm. G. Leininger, Mohnton, Pa.; Allegheny Hosiery Mills, Philadelphia, Pa.; Rosenau & Loeb, Philadelphia, Pa.; The J. H. Sprowles Co., Philadelphia, Pa.; H. R. Epler & Son, Reading, Pa.; G. W. Hawk, Reading, Pa.; Metropolitan Knitting Mills, Reading, Pa.; Reading Knitting Mills, Reading, Pa.; A. G. Haak, Richland, Pa.; I. X. L. Hosiery Mills, Robesonia, Pa.; Robesonia Knitting Mills, Robesonia, Pa.; Maiden Creek Hosiery Co., Temple, Pa.; Roanoke Knitting Mills, Roanoke, Va.

Mr. Carter has recently returned from a trip through the West and South, and is very much gratified at the enthusiasm which has developed in connection with the work of the association. The hosiery manufacturers realize that conditions are not only favorable for the further growth and development of the association, but that they necessitate such a movement. Many of the trade abuses that now exist are an unnecessary hindrance to the manufacture of hosiery, and there is no reason why the association may not be the means not only of correcting these troubles, but also of remedying other evils that are now apparent and that tend to make the hosiery manufacturing business far less profitable than is desirable or necessary.

Details for the exhibition to be held during the annual convention at Philadelphia on May 13 to 15 are being rapidly and satisfactorily worked out.

New Orleans Branch of the H. W. Johns-Manville Co.

In order to handle to the best advantage their large and rapidly increasing business in this section, the H. W. Johns-Manville Co., of New York, will open a New Orleans branch on January 1. This will consist of a large retail store, offices and warerooms, located in the three-story building at the corner of Baronne and Ferdido Streets.

The Johns-Manville Co. are well known as being the largest manufacturers of asbestos and magnesia products in the United States, if not in the world. They also manufacture a large line of electrical specialties. W. E. Carpenter, formerly the local manager of the Western Tube Co., has been appointed manager of the New Orleans branch. The company intend to keep a large stock of their products constantly on hand, so that shipments can ordinarily be made from New Orleans stock. Among the products of the company may be mentioned asbestos roofing and insulating materials, steam pipe and boiler covering, asbestos packings of all kinds, "Noark" fuse devices, and other well-known electrical devices manufactured by them.

Cork Insert Loom Clutches.

The list of important mills using the "Compo" cork insert loom clutches is rapidly growing, and includes half a dozen mills of the American Woolen Co., the Wood Worsted Co., the Arlington Mills, Geo. E. Kunhardt, the Amoskeag Manufacturing Co., Geo. H. Gilbert Mfg. Co., the Sterling Mills, the Liberty Silk Co., the New England Co., and many others. The Crompton & Knowles Loom Works, the Crompton-Thayer Loom Co. and the Lowell Machine Shop supply them as desired. The advantage of this clutch is that it is not affected by wear, dust, oil, or atmospheric conditions. It picks up the load quickly, does not require adjustment, and transmits twice as much torque as leather-faced clutches. Full particulars may be had of the National Brake & Clutch Co., 16 State St., Boston.

Turkish Softener.

We would call the attention of our readers to the advertisement on another page of this issue of O. F. Zurn Co., 23 and 25 South Fifth Street, Philadelphia, Pa., manufacturers of "Turkish Softener," which is used extensively by the hosiery and knit goods trade for fast black dyeing, finishing, etc. They also deal in resolvent compounds, olive oil, soluble oil and cream softener.

Among new textile mills which are to be heated and ventilated by the B. F. Sturtevant Co., of Boston, Mass., are the spinning mill and weave shed for the Burgess Mills, Pawtucket, R. I., equipped with three complete hot blast apparatus.

Two Great Cities Brought Close Together.

The New Jersey Central, following its usual progressive policy, has so arranged its Philadelphia service that every train will be a 2-hour train to and from Philadelphia, and there will be a train every hour, on the hour, from 7.00 A. M. until 6.00 P. M. on this schedule. There are also trains at 7.00, 8.00 and 9.00 P. M., and other trains at 6.30, 8.30, 11.30 A. M., 1.30, 5.30 P. M., and at 12.15 midnight. In addition to this service, there are trains to 24th and Chestnut Streets, Philadelphia, at 1.30 A. M., 8.00 A. M., 10.00 A. M., 12.00 noon, 2.00 P. M., 4.00 P. M., 6.00 P. M. and 7.00 P. M. Dining cars are operated on morning, noon and night trains and all of the hourly trains have the latest Pullman parlor cars. The New Jersey Central's road bed is conceded to be the acme of perfection, its line is protected by block signals, and its equipment very much up to date. The new West Twenty-third Street Terminal in the heart of the business and theatre section has proved a most popular station for the traveling public, and its Liberty Street station, with its close proximity to the Elevated, Surface and Subway stations likewise makes it convenient to approach.

McBride Warned Against Selling Any More Feeds.

Messrs. Roberts and Mitchell, attorneys for Geo. S. Harwood & Son, builders of the Bramwell and the Apperly feeds, have recently advised them as to the outcome of the contempt proceedings in the case involving the McBride feed. The letter follows:

Messrs. George S. Harwood & Son.

Dear Sirs: As you are sole licensees under the Kemp patents relating to improved travelers on so-called Apperly or intermediate card feeds, we think it proper that you should be advised of the outcome of contempt proceedings recently brought by Mr. Kemp against P. L. McBride, McBride Machine Company and William F. McBride, treasurer of that company, in connection with the violation of an injunction in the Supreme Judicial Court forbidding P. L. McBride from selling certain diagonal feeds, including the McBride feed.

As you will recall, on April 25, 1906, the Supreme Court found the two McBrides and the McBride Machine Company guilty of contempt of court for selling the McBride feeds in violation of this injunction and sentenced P. L. McBride to imprisonment in the common jail of Middlesex County for six months unless he paid a fine of $1,000 within twelve days; (this, you will recall, was P. L. McBride's second conviction of contempt for selling McBride feeds), ordered that the McBride Machine Company be fined $250, and William F. McBride be committed to the common jail for three months unless the fine was paid within twelve days; that William F. McBride, the treasurer, be committed to the common jail for three months, unless he, personally, paid a fine of $250 within twelve days. The fine of McBride Machine Co. and William F. McBride, amounting in all to $500, was paid within the required time. P. L. McBride failed to pay his fine and departed from the jurisdiction of Massachusetts.

On Saturday evening, October 6, 1906, Mr. P. L. McBride came into the State to visit his family at Lowell and was there discovered and arrested by Deputy Sheriff Stiles and committed to the common jail in Lowell under the six months' sentence. Having been in jail nearly three weeks, and having under stress of imprisonment paid his $1000 fine into the court, P. L. McBride filed a petition to have his sentence modified. This petition was heard by Justice Loring of the Supreme Court on October 26, 1906. McBride, as the court stated from the bench, made out no case whatever why his sentence should be ameliorated a single day, but made out a hard luck story about sickness in his family and poverty and threw himself upon the mercy of the court. Solely out of consideration for his family, Judge Loring remitted the balance of the sentence after November 1, 1906. In the course of the hearing Judge Loring vigorously warned Mr. McBride that if any more feeds were sold by him or by the McBride Machine Company, he would be committed for a third time and it would then go hard with him. Yours very truly,

Roberts & Mitchell.

Recent Textile Patents.

BLEACHING. 837,730. Karl Reinking and Erich Dehnel, Ludwigshafen-on-the-Rhine, and Hans Labhardt, Mannheim, Germany, assignors to Badische Anilin & Soda Fabric.

BURLAP OR SIMILAR FABRICS. Padding and Ornamenting. 837,122. Paul Richter, Tenafly, N. J.

CELLULOSE THREADS. Manufacture of Lustrous. 839,013. Rudolf Linkmeyer, Brussels, Belgium.

CLOTH SHRINKING DEVICE. 837,281. Albert Bray, Cleveland, Ohio, assignor to Spotless Steam Sponger Co., Cleveland, Ohio.

COTTON CHOPPER AND SCRAPER. 836,718. Junius E. Tucker, Memphis, Tenn.

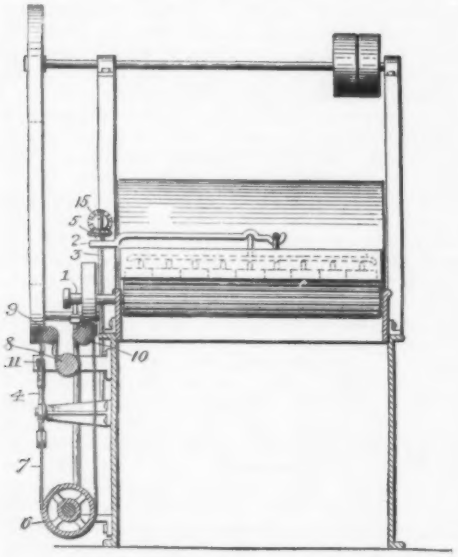
COTTON CONVEYING and Cleaning Apparatus. 837,205. William E. Elam, Atlanta, Ga.

COTTON PICKER BRACE. 836,802. William I. Daniel, Commerce, Ga.

COTTON PICKERS or Openers. Means for Regulating the Evening Mechanism for. 833,155. Walter J. Britton, Spartanburg, S. C.

This invention relates to that class of machinery known as cotton pickers or openers. Such machinery is provided with evening mechanism, the purpose of which is to render the lap or roll of cotton of uniform weight per unit of length. So long as the conditions remain the same—that is, the density of the cotton and other circumstances remain unchanged—the evening mechanism will operate automatically to accomplish this result. It may be, however, that the density of the cotton or other conditions will change, when in order

to maintain the uniformity of weight of the lap it will be necessary to change the adjustment of the



evening mechanism, or it may be desired to alter the weight of the lap, which may also be accomplished by adjusting the evening mechanism.

FABRIC COATING MACHINE. 836,743. Richard Falter, New York, N. Y.

FABRIC GUIDING APPARATUS. 837,367. Abraham Wood, Ramsbottom, England.

FABRIC TO RENDER it Impervious. Treating. 837,005. Waldo Spaulding, East Pepperell, Mass., assignor to Vellumoid Paper Co., Worcester, Mass.

FABRICS. Apparatus for Repairing Defects in Textile. 838,890. Georg Oehler and Theodor Bauer, Greiz, Germany.

FELTED MATERIAL. Machine for Finishing the Surface of. 838,616. Gustav Goldman, Baltimore, Md.

FIBROUS SUBSTANCES. Agglomerating. 837,193. Charles A. C. DeCaudemberg, Nice, France.

JACQUARD MACHINE. Double Lift Open Shed. 838,279. Caspar Senn, Ruti, Switzerland.

LACE FABRIC. 838,174. John E. Dudson, Philadelphia, Pa.

LOOM HEDDLE FRAME. 837,264. William Fehr, Philadelphia, Pa., assignor to Steel Heddle Manufacturing Co.

LOOM. Kindergarten. 836,842. Jessie C. Tyndall, St. Louis, Mo.

LOOM PROTECTOR MECHANISM. 838,162. Charles W. Bates, St. Hyacinthe, Quebec, Canada.

LOOM SHUTTLE. 12,579 (Reissue). Joseph Caldwell and Christopher Gildard, Swansea, Mass.

LOOM SHUTTLE. 838,050. Elizabeth Nuttall, Bury, England.

LOOM SHUTTLE. 837,765. Everett S. Wood, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM. SHUTTLE, Cotton. 838,629. Joseph E. Lemyre, Manchester, N. H.

LOOM SHUTTLE BOX Operating Mechanism. 837,284. Randolph Crompton and John R. Fitton, Worcester, Mass., assignors to Crompton-Thayer Loom Co., Worcester, Mass.

LOOM SHUTTLE MOTION. 837,198. Chauncey C. Crane, Housatonic, Mass.

SHUTTLE FOR COTTON LOOMS. 838,123. Joseph E. Lemyre, Manchester, N. H.

This invention relates to shuttles having bobbins provided with a filling change, and more specifically to those which are provided with a cone on the spindle, which receives the blows of the feeler and is held in position by the thread until

Fig. 1.

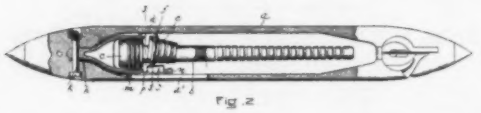


Fig. 2

but little thread is left on the spindle, when the cone falls and allows the bobbin to be thrown off. The object of this shuttle is to obviate this difficulty by providing means by which, when the thread on the bobbin has been sufficiently reduced, the feeler, instead of striking the cone directly, strikes a spring, which acts on the cone in such a manner that it not only falls off the head, but is held in such a position on the spindle with relation to the head that after it has been thrown off or drops it cannot return to its seat.

LOOM SHUTTLE. Weft Detecting. 837,214. James G. Gabe, Clifton Heights, Pa.

LOOM STOP MOTION. 837,110. Herbert W. Owen, Dover, N. H.

LOOM TEMPLE. 837,746. Ephraim H. Spedding, Lowell, Mass.

LOOMS. NEEDLE MOTION for Pile Fabric. 837,019. Fred A. Whitmore, Philadelphia, Pa., assignor to Crompton & Knowles Loom Works.

LOOMS. THREAD TENSIONING Device for Replenishing. 837,862. Alida M. Marcoux, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

SILK. APPARATUS for the Manufacture of Artificial. 838,758. Edmund Thiele, Brussels, Belgium.

SPINNING RING AND HOLDER. 837,406. Lewis T. Houghton, Worcester, Mass.

WOOL WASHING MACHINE. 838,998. James D. Hunter, North Adams, Mass.

VISCOSE. Producing Lustrous Threads from. 836,452. Max Muller, Altdamm, Germany.

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BUILDERS AND IMPORTERS OF

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Friction Load

You know the friction load of a mill, the power to turn belts and shafting alone, is high, from 20-50 per cent. of your total load.

Half of this is from tight belts.

Cling-Surface permits every belt to be run easy and carry fullest loads and turns this half from overcoming friction to doing work.

Besides preserving the belts, saving oil, labor and fuel, and giving steady, even speed at machines.

It is a belt food — not a sticky dressing.

A trial order will prove it. Send for one.

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The design of the "Steam End" of Paper, Textile and Knitting Mills and other Factories. ECONOMIES in the "Steam End" of Mills already equipped. Improvement of Old Plants. Coated Paper and Other Drying Lithograph and Printing Establishments—Ventilation and Power Transmission.

We make a study of your conditions and arrangements for Steam Generation, Transmission, and Utilization in Drying, Water Heating, Lighting, etc., also your arrangements for Power Development, Transmission and Application, and suggest improvements and changes which will save you money by increasing your efficiency of operation and reducing the cost of production. **Saving in fuel cost.**

We should like to call and look over your plant. No charge for inspection. No proposition to submit to you unless we can guarantee results.

Our fifteen years experience in stoker, boiler, power, heating, ventilating and drying engineering, is basis of our advice to clients.

Buyers' Index.

The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Acetylene Generators.
Wing, L. J., Mfg. Co.

Air Moistening System.
American Moistening Co.
Bell Pure Air & Cooling Co.

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Ferguson, John W.
Main, Chas. T.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Floors.
Simpson Bros. Corporation.

Asphalt Tanks.
Scaife, W. B., & Sons.

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Harwood, Geo. S., & Son.
Kitson Machine Co.
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Stephenson Mfg. Co.

Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.

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——See Tapes and Braids.

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Johns-Manville Co., H. W.

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——See Steam Boiler Insurance.

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——See Steam Boilers.

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Connecticut Box Company.

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New England Butt Co.
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——See Napping Machines.

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Mason Brush Works.
Parks & Woolson Machine Co.

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Curtis & Marble Machine Co.
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——See also Dyeing, Bleaching, Machinery, etc.

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Rice, Barton & Fales Machine & Iron Company.

Comb Repairs.
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Cop Tubes.
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Taunton, New Bedford, Copper Co.

Coppersmiths.
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Copper Work for Dyers.
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Crompton-Thayer Loom Co.
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Kilburn, Lincoln & Co.
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Westinghouse Electric & Mfg. Co.
Wing, L. J., Mfg. Co.

Electric Hoists.
Yale & Towne Mfg. Co.

Electric Lamps.
Sturtevant, B. F., Company.

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General Electric Co.
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Westinghouse Electric & Mfg. Co.
Wing, L. J., Mfg. Co.

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Morse, Williams & Co.
Salem Elevator Works.

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Engine Stops.
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Feed Water Purifiers.
Philadelphia Water Purification Co.
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Scaife, W. B., & Sons.
United Water Improvement Co.

Finishing Machinery.
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Borgner, Cyrus, Co.

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Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

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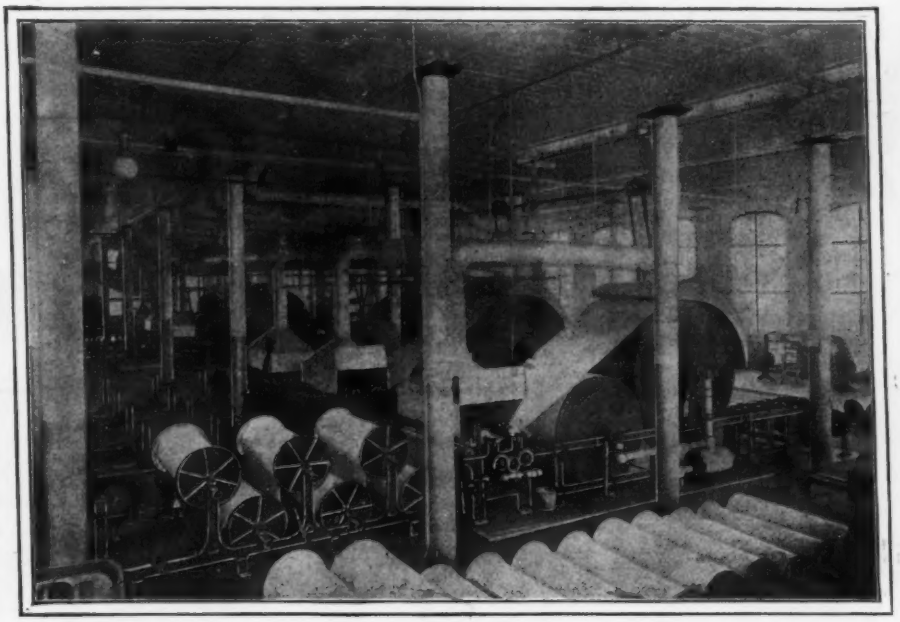
We go to the heart of the matter

in ventilating slasher rooms by closely hooding the source of the trouble—the size box and the large cylinder—and drawing the steam away by means of a fan. The yarn dries quicker and the output is increased.



In an old plant with wooden hoods, we disconnect the ventilators through the roof and substitute a fan with galvanized iron pipe, or better yet, remove the wood construction altogether, and install an up-to-date arrangement of small galvanized iron hoods.

Send for Catalogue No. 105.

B. F. STURTEVANT CO., BOSTON, MASS.

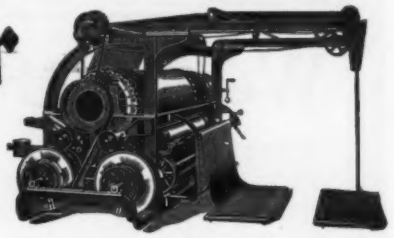
General Office and Works, Hyde Park, Mass.

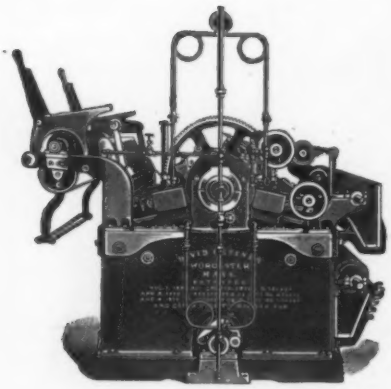
New York Philadelphia Chicago Cincinnati London

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fans, Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Fuel Economizers; Forges, Exhaust Heads, Steam Traps, Etc. 417

David Gessner

Worcester, Mass.

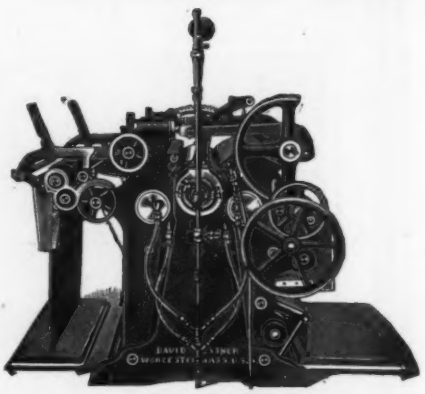




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Fire Pumps.
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Hopkins Machine Works.
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Salvator Transfer, Inc.

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National Brake & Clutch Co.

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Green Fuel Economizer Co.
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Hunter, Jas., Machine Co.
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Farrell Foundry and Machine Co.

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Insurance (Casualty, Fire and for Loss of Profits.)
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Willcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

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Note that our heddles are now made out of narrower wire.

This makes them lighter in weight and permits plenty of light in harness.

Our New Stop Motion is simplicity itself.

Will work on any number of shafts, no extra entering of drop wires because no drop wires are required. It is all in the heddles and shafts. Our heddles can be used, or German wire heddles, just as you choose.

Steel Heddle Manufacturing Co.

1842 Germantown Ave., Philadelphia.

Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes, E., Mfg. Co.
Jones, Lewis.
Kinsey, Walter.
Koch, Edward W.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Ruth Machine Co.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walter & Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
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Dodge Needle Co.
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Mayo Knitting Machine & Needle Co.
Page Needle Co.
Ruth Machine Co.
Treat, Orion.
Wardwell Needle Co.

Labeling Machines.
Beck. Chas., Paper Co., Ltd.

Lamps, Incandescent.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Lawyers (Mercantile).
Yeomans & Ironside.

Leather.
Bowes, L. M., Co.

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Natl. Brake & Clutch Co.

Loom Pickers.
Garland Mfg. Co.

Loom Repairs and Parts.
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Crompton-Thayer Loom Co.
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Cook's, Adam, Son.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.

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Massachusetts Fan Co.
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Philadelphia Water Purification Co.
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United Water Improvement Co.
Quillers.
Foster Machine Co.
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Diamond Textile Machine Works.
Schofield, Wm., Co.
Smith & Furbush Machine Co.
Ramie Tops and Noils.
Tierney, Frank A.
Raw Hide Gears.
New Process Raw Hide Co.
Reed and Harness Manufacturers.
American Supply Co.
Garland Mfg. Co.
Walder, J.
Reducing Valves.
Crosby Steam Gage & Valve Co.
Mason Regulator Co.
Walworth Mfg. Co.
Regulators (Pressure).
Crosby Steam Gage & Valve Co.
Mason Regulator Co.
Walworth Mfg. Co.
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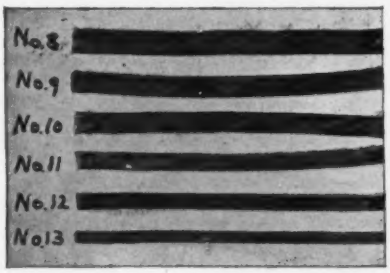

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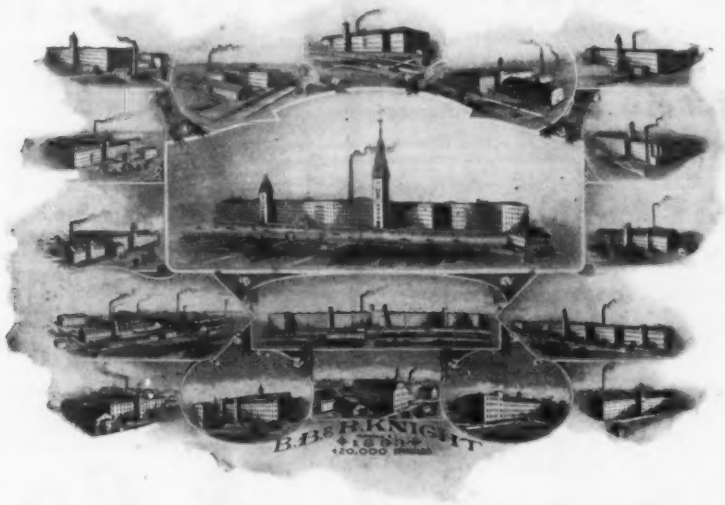

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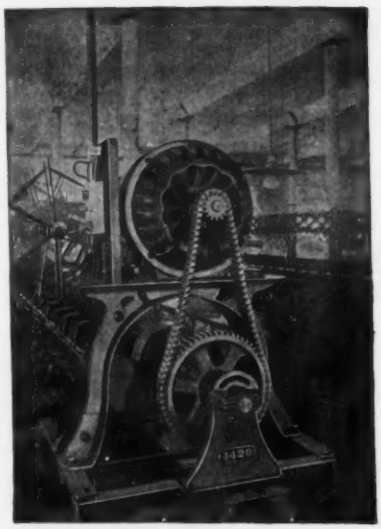

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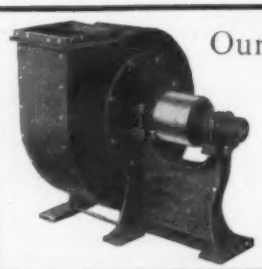

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SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, is now a member of the Textile World Record staff, and gives special attention to this department. He would be pleased to hear from any of his friends who may be interested.

WOOLEN SUPERINTENDENTS.

Superintendent of a Worsted or woolen mill. Position wanted by a man 48 years of age, American, married. Has worked on all classes of woolen and worsted goods. A No. 1 reference. Could be employed at short notice. 3833, Textile World Record, Boston, Mass.

Assistant Superintendent or assistant designer in a worsted or woolen mill. Position wanted by a man 32 years of age, single, American. Has worked on fine worsted and woolens, worsted and wool overcoatings, low grade worsted and woolens, men's wear and dress goods. Familiar with American and English machinery. Good reference. 3839, Textile World Record, Boston, Mass.

Superintendent and Designer or assistant superintendent and designer in a woolen mill. Position wanted by a man 29 years of age, American, married. Worked on all grades of woolen goods, both wool and worsted, also blankets. Familiar with all kinds of machinery. Will go any place for a good position. 3838, Textile World Record, Boston, Mass.

Designer or Assistant Superintendent or assistant in a woolen mill. Position wanted by a man 31 years of age, single, Scotch. Has had a number of years' experience in leading mills. Is familiar with fancy worsted goods, men's wear, dress goods. Is also familiar with overcoatings, cloakings, men's wear and dress goods in low stock. Good reference. 3829, Textile World Record, Boston, Mass.

Superintendent or Overseer in a carpet or rug mill. Position wanted by a man 31 years of age, English, married. Held the position in England in the ingrain department for three years, the Axminster rug department, four years. Good reference. 3826, Textile World Record, Boston, Mass.

Asst Supt. or Overseer of Weaving. Position wanted by a man 50 years of age, married and American. Has worked on kerseys, beavers, cheviots, overcoatings, meltons, etc., and is familiar with all kinds of woolen machinery. First-class references. 3528, Textile World Record.

Manager or superintendent of a worsted mill. Position wanted by a man 33 years of age, married and English. Is experienced on all grades of wool and hair, and is familiar with all makes of worsted machinery. First-class references. 3596, Textile World Record, Boston, Mass.

Superintendent or Assistant Superintendent. Position wanted by a man 29 years of age, Scotch. Is experienced on woolens and worsteds, men's and ladies' wear, flannels, homespuns and coverts. Is familiar with Crompton & Knowles looms, Davis & Furber and Johnson & Bassett mules, James Hunter and Smith garnet machines. First-class references. 3615, Textile World Record, Boston, Mass.

Superintendent or Manager of Woolen Mill. Position wanted by a man 47 years of age, married, Scotch. Is experienced on worsteds, fancy cassimeres, homespuns, meltons, thibets, kerseys, overcoatings, cheviots and dress goods. Is familiar with all kinds of woolen machinery. Good references. 3619, Textile World Record, Boston, Mass.

Manager, superintendent or designer. Age 30; English; married. Experienced in England and in this country. Mohairs, all classes of worsted suitings, plain and fancy dress goods. 3184, Textile World Record.

Superintendent or Designer. American, 37 years of age, married, wants a position in United States. Worked on light and heavy weight woolen and worsted goods, fancy and plain, wool and worsted piece dyes, also pebble worsteds. Been superintendent 6 years and designer 8. 3353, Textile World Record, Boston.

COTTON SUPERINTENDENTS.

Superintendent of a Weaving Plant or overseer of weaving. Position wanted by a man 40 years of age, American, married. Worked on fancy and plain cottons, silk taffetas, sheetings, muslins, fancy colored cloths in white and colored. Also fancy towels. Good reference. 3837, Textile World Record, Boston, Mass.

Superintendent of a Bleachery or overseer of dyeing. Position wanted by a man 44 years of age, American. Worked on cotton piece dyes, plain and prints, spool cotton, yarns, warps, raw stock and hosiery. Familiar with all kinds of machinery used in an up-to-date bleachery and dye works. Good reference. 1680, Textile World Record, Boston, Mass.

Manager, Superintendent, Buyer or cost accountant in a cotton mill. Position wanted by a man 30 years of age, American, single. Has had a practical training in the manufacturing of cotton goods. Good reference. 3834, Textile World Record, Boston, Mass.

Assistant Superintendent. Position wanted by a young man, American, single, 25 years of age. Experience covers a period of 12 years in cotton and woolen mill, including five years in a Textile Machinery Mfg. Co. Familiar with the general construction of most American and English machinery. A graduate of a business college, accounting course. Practical experience in weaving, loom fixing and carding (cotton), finishing and dyeing of (woolen), bookkeeping (mill) and drafting. Good reference. 3832, Textile World Record, Boston, Mass.

Superintendent of a Cotton Mill. Would consider a position as overseer of weaving or carding. Position wanted by a man 47 years of age, American, married. Worked on plain and fancy white cotton goods, both coarse and fine. Has held the position as superintendent in a number of mills. First class reference. 3821, Textile World Record, Boston, Mass.

Assistant Superintendent or overseer of weaving in a silk mill. Position wanted by a man 38 years of age, German, married. Has worked on broad silks, ribbons, bindings, webbings, woven labels for shoe factories. Familiar with Crompton & Knowles, Schaum & Uhlinger, Ehrenberg and all kinds of winding and quilling machines. Will not go to Canada, Maine, New Hampshire or Vermont. Good reference. 3819, Textile World Record, Boston, Mass.

Superintendent of a cotton mill. Position wanted by a man, 42 years of age, American, married. Has worked on a general line of colored goods, sheetings, prints and shirtings. Familiar with all kinds of cotton machinery. Has held a position as superintendent in some of the leading mills. Could be employed at short notice. 3726, Textile World Record, Boston, Mass.

Superintendent of Bleaching and finishing works. Has experience on Nottingham, Irish point, bobbinet and renaissance curtains a specialty. Also Swiss dots, organdies, lace handkerchiefs, embroideries, etc. Thoroughly understands aetying, carbonizing and dyeing. A practical man, no experidesigner. Worked on shirting and all kinds of menter. 3443, Textile World Record, Boston.

Superintendent or Assistant Superintendent. Position wanted by a man 31 years of age, married. American. Is experienced on men's half hose, ladies' work and rib top, boys' and misses' ribbed and infants' cassimere silk tip hose. Is familiar with Acme, Hemphill, Scott & Williams, Brinton, Wildman, Nye & Tredick, Campbell & Clute and other knitting machinery. Good references. 3643, Textile World Record, Boston, Mass.

WOOLEN WEAVERS.

Overseer of Woolen Weaving. Position wanted by a man 46 years of age, American, married. Worked on all kinds of men's wear, wool, worsted and cotton worsted. Familiar with Crompton & Knowles looms. Has had 18 years' experience as overseer. Could take a position at once owing to the mill where employed closing. Good reference. 3823, Textile World Record, Boston, Mass.

Overseer of Weaving in a woolen or worsted mill. Position wanted by a man, 44 years of age, American, married. Worked on fancy worsted suitings, fancy cassimeres, cloakings, cheviots, dress goods and fancy unions. Familiar with the Crompton & Knowles and Crompton & Thayer fancy looms. Will not go west, south or Canada. First-class references. 3764, Textile World Record, Boston.

Overseer of Weaving. 36 years of age, with 18 years' experience in a large mill in Massachusetts. Accustomed to woolens and worsteds, high and low grade, and to all machinery used in weave room. Prefers position in or about New England. 3373, Textile World Record.

Overseer of Woolen Weaving. American, 37 years of age, accustomed to fancy worsteds and woolens, dress goods, etc. Held last position 6 years. Prefers the East. 3397, Textile World Record, Boston.

Overseer of Woolen Weaving, 44 years of age, with experience on woolen and worsted cassimeres, dress goods, overcoatings, etc., and on Knowles and Crompton looms. Would like position in the Middle West. 3385, Textile World Record, Boston.

Overseer of Weaving. Position wanted by a man 40 years of age, married, English. Has worked on all kinds of woolen and worsted goods. Is familiar with Knowles and Crompton looms. Good references. 3647, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 45 years of age, and married. Has worked on all classes of woolen and worsted goods, such as kerseys, beavers, flannels, fancy cassimeres, fancy worsteds, men's wear, serges, dress goods, etc. Is familiar with Crompton & Knowles looms. First-class references. 3546, Textile World Record.

Overseer of Woolen Weaving. Position wanted by a man 38 years of age, married, American. Worked on fancy woolens and worsteds, fancy tweeds, shawls, flannels and beavers. Good references. 3550, Textile World Record.

Overseer of Weaving. Position wanted by a man 32 years of age and married. Has worked on woolen dress goods, suitings, cotton worsteds, worsted dress goods, kerseys, beavers and blankets. Is familiar with Crompton, Knowles, Furbush, Davis & Furber looms and dobby looms. Has first-class recommendations. 3544, Textile World Record.

Overseer of Weaving. Position wanted by a man 28 years of age, single and Scotch. Has worked on wool and worsted, and union goods, blankets, shirtings, rugs, etc. Is familiar with Crompton & Knowles, also English looms and dobbies. Has good references. 3507, Textile World Record.

Overseer of Woolen Weaving. American, 40 years of age, married, with experience on worsteds, cassimeres, kerseys, dress goods, satinets, etc., wants a position in the East. Has worked on all machinery used in this work. 3412, Textile World Record.

Overseer of Weaving. Position wanted by a man, American, 45 years of age and married. Has worked on dress goods, cloakings, flannels, meltons and unions. Is familiar with Crompton & Knowles and Stafford looms. Good references. 3494, Textile World Record, Boston.

Overseer of Weaving. Worked on worsteds, cassimeres, dress goods, and all kinds of woolen goods. Crompton & Knowles looms. First-class references; American; 45 years of age. 3262, Textile World Record.

Overseer of Weaving. Position wanted by a man 38 years of age, American, married. Has worked on woolen and worsted goods and is familiar with Crompton & Knowles looms. Good references. 3498, Textile World Record.

Overseer of Woolen Weaving. 18 years' experience as overseer. Worked on cassimeres, cloakings, chinchillas, cheviots, beavers, meltons, shawls, also worsteds and on Crompton and Knowles looms, wants a position in the East. Good references. 3422, Textile World Record, Boston.

FINISHERS

Overseer of Woolen Finishing. Position wanted by a man 40 years of age, single, American. Worked on all kinds of steam faced finished goods, broad cloths, kerseys, meltons, also cassimeres, worsteds and cotton worsteds. Good reference. 3813, Textile World Record, Boston, Mass.

Overseer of Woolen Finishing, wet or dry. Position wanted by a man 22 years of age, single, English. Worked on fancy worsteds, cotton worsteds, woolens and dress goods. Familiar with all kinds of finishing machinery, including James Hunter, Birch Brothers' crabbing machinery, Park & Woolson, single and double shears, Gessner & Miller rotary steam presses. Prefers a position in the Eastern states. Good reference. 3824, Textile World Record, Boston, Mass.

Overseer of Woolen Finishing. Position wanted by a man 46 years of age, English, married. Worked on beavers, kerseys, broad cloths, meltons, thibets, friezes, coverts, venetians, fancy worsteds, piece dyes, cassimeres and mercerized goods. Familiar with all makes of finishing machinery. Out of work on account of mill closing. Could accept a position at once. Good reference. 3831, Textile World Record, Boston, Mass.

Overseer of Finishing and dyeing. Position wanted by a man 40 years of age, American, married. Worked on dress goods, beavers, cassimeres, meltons, blankets, trecoes, kerseys, thibets, broad cloths and steam faced finished goods. Also unions and satinets. Familiar with all kinds of machinery. Good reference. 3817, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 46 years of age; married; American. Has worked on woolens and worsteds of all kinds, and is familiar with all makes of finishing machinery. Good references. 3610, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 27 years of age; married; American. Has worked on cassimeres, dress goods, all face finished goods, fancy and cotton worsteds, piece dyes, satinets, etc. Is familiar with all kinds of finishing machinery. 3338, Textile World Record, Boston, Mass.

Overseer of Finishing. Worked on cotton unions, dress goods, cassimeres, beavers, kerseys, covert and army goods. First-class recommendations: 55 years of age. 1661, Textile World Record, Boston, Mass.

Overseer of Finishing Room. Cut and full fashioned balbriggan ribbed goods. Familiar with Union Special, Wheeler & Wilson, Willcox & Gibbs, Merrow, etc. Excellent references. Address 3163, Textile World Record, Boston.

Boss Finisher of underwear, cotton or wool mixed goods, who understands Wheeler & Wilson buttonhole machines, Union Button, Union Special, etc., is open to a position in the New England or Middle States. 30 years; American; married. Been employed for a number of years by concern for whom he is now working. Exceptionally good references. 1958, Textile World Record.

Boss Finisher, or would take a second hand position or wet finishing. Familiar with all kinds woolen and worsted goods, both steam and dry finishing. Age 45; English; first-class references. 2061, Textile World Record.

Overseer of Finishing. Position wanted by a man 30 years of age, married, American. Worked on worsteds and woolens, both high and low grades, and all kinds of finishing machinery. First-class recommendations. 3503, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 42 years of age, American and married. Has worked on all classes of fancy worsteds and is familiar with all kinds of finishing machinery. Good references. 3497, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 40 years of age, married and American. Has worked on all kinds of wool and worsted and cotton mix goods and cotton worsteds. Is familiar with all kinds of machinery used in wet and dry finishing. Good references. 3536, Textile World Record, Boston, Mass.

WOOLEN CARDERS.

Overseer of Carding. Position wanted by a man 30 years of age, married, American. Has worked on all kinds of woolen, cotton and shoddy mix goods and felts. Is familiar with all makes of American and English carding machinery. Good references. 3636, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 34 years of age, married. Has worked on all wool, wool cotton and shoddy mixes, cassimeres, kerseys, cheviots, cloakings, etc. Is familiar with all makes of American cards. Good references. 3562, Textile World Record, Boston, Mass.

Overseer of Combing. Position wanted by a man 27 years of age, married, English. Has worked on men's wear and fancy dress goods. Is familiar with Noble combs of all makes, Crompton, Taylor, Wadsworth, Smith and Prince. Good references. 3617, Textile World Record, Boston, Mass.

Overseer Woolen Carding. Position by a man 33 years of age; married. Worked on kerseys, meltons, cheviots, blankets, robes, underwear and hosiery, felts and sale yarns. Worked on D. & F., Lombard, Cleveland, Furbush, Platt Bros., Thornton Bros., John Haigh, Barker, D. & F. and English condensers. 3462, Textile World Record.

Overseer of Woolen Carding and spinning. Position wanted by a man 42 years of age, American, married. Worked on all kinds of stock, wool, cotton and shoddy mixes, yarns from 1/2 to 6 run. Familiar with all kinds of cards and J. & B. mules. Good reference. Could accept a position at once. 3822, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill. Position wanted by a man 42 years of age, married, American. Worked on wool, cotton and shoddy mix goods. Worked on D. & F., Lombard, Cleveland cards. First-class references. 3566, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 57 years of age, married, American. Has worked on all kinds of woolen goods, and is familiar with all makes of American and English carding machinery. Has first-class recommendations. 3525, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 39 years of age, married and American. Has worked on all wool stock, wool and cotton mixes, wool and shoddy, cotton and shoddy, and shoddy, and is familiar with all American made cards. First-class recommendations. 1827, Textile World Record, Boston, Mass.

Overseer of Woolen Carding or second hand in large mill. Worked on all wool shoddy and cotton mix, silk noil goods. 43 years of age; married; good references. One worker in family for finishing room. 3444, Textile World Record.

Boss Carder in a woolen mill. Worked on all wools, cotton and shoddy mixes, and is familiar with Davis & Furber and Cleveland cards, and all makes of rub aprons and different rub rolls. 29 years of age; American; first-class references. 2284, Textile World Record.

Overseer of Carding.. Position wanted by a man 35 years of age, American. Has worked on all wool, cotton and shoddy mix goods, and is familiar with Lombard, Davis & Furber and Smith carding machinery. Good references. 3661, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 36 years of age; married; German. Has worked on all classes of wool, cotton and shoddy mix goods. Is familiar with Furbush, Smith and Bridesburg carding machinery. Good references. 3606, Textile World Record, Boston, Mass.

Overseer of Woolen Carding and Spinning. Position wanted by a man 34 years of age, married, an American, has worked on knitting yarns, cotton, wool and shoddy mixes, also woolen goods of all descriptions. Familiar with the D. & F. and J. & D. machines. First class references. 3721, Textile World Record.

Overseer of Carding, or Supt. in a Knitting Mill, or Assistant Superintendent in a Woolen Mill. Position wanted by a man 45 years of age, American, married, has worked on all kinds of stock used in a woolen mill or knitting mill, has been overseer in large mills in N. E. S., and has first class recommendations. Understands the American and English machinery. 3704, Textile World Record.

WOOLEN SPINNERS.

Overseer of Woolen Spinning. Position wanted by a man 40 years of age, American, married. Has worked on all kinds of yarn and stock. Familiar with D. & F. and J. & B. mules. Good reference. 3818, Textile World Record, Boston, Mass.

Overseer of Spinning. American, with experience on nearly all classes of woolen and worsted goods, and on all machinery used in his work, wants position in the East. Best of references furnished. Wants first-class position. 3384, Textile World Record.

Overseer of Woolen Spinning, or would accept a good second hand position. American; 25 years of age; accustomed to wool and cotton mixes, wool and shoddy, wool pure cotton goods. Worked on the different kinds of machinery used in this work. 3410, Textile World Record.

Overseer of Woolen Spinning. 33 years of age; married, with 6 years' experience as overseer; worked on all kinds of yarns from 3/4 run to 10 run, and on nearly all the machinery used in spinning room. Prefers a position in New England. 3413, Textile World Record.

Overseer of Woolen Spinning. 30 years of age, with experience on all wool, all shoddy, wool and shoddy mixes, etc. Worked on D. & F., J. & B. mules and some other makes. Prefers the East. Would consider second hand position in a large mill. 3431, Textile World Record.

Overseer of Spinning. Position wanted by an American, 36 years of age and married. Worked on wool, cotton and shoddy mixes. Familiar with Davis & Furber mules. Good references. 3484, Textile World Record, Boston.

Overseer of Woolen Spinning. Position wanted by a man 48 years of age, married, English. Worked on all kind of yarns, wool, cotton and shoddy mix, on D. & F., J. & B., Platt, Curtis & Kent mules. Good references from first-class mills. Would prefer a position in middle west. 3499, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 26 years of age, American. Has worked on all classes of goods from 3/4 run mohair to 6 and 7 run, including cotton and wool mixes. Is familiar with Johnson & Bassett and Davis & Furber spinning machinery. Good references. 3563, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 30 years of age; English. Has worked all kinds of stock, cotton, wool and shoddy, from 5/8 run to 13 and is familiar with Davis & Furber mules and operators. Good references. 3595, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 37 years of age; married and American. Has worked on all kinds of wool, cotton and shoddy mixes. Is familiar with Davis & Furber and Johnson & Bassett spinning machinery and operators. Good references. 3603, Textile World Record, Boston, Mass.

Carder and Spinner. Been overseer 32 years, making every variety of cassimere, flannels, overcoatings, clonkings, dress goods, etc. Married; American. 3132, Textile World Record.

Overseer of Spinning, twisting, spooling and reeling. Position wanted by a man 28 years of age, married and American. Has worked on army and navy goods, fine and heavy woolen and merino yarns, fine worsteds, and low stock shoddy and cotton mixes. Is familiar with Davis & Furber, James Smith, Whiteley, English Bridesburgh, and Platt mules. Would prefer a position near Philadelphia. Good references. 3517, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 30 years of age, married and American. Has worked on cotton, wool, shoddy and all grades of mixes from 7/8 run to 9. Is familiar with almost every make of spinning machinery. Good references. 3538, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 36 years of age. Has worked on all kinds of woolen goods and is familiar with Davis & Furber mules. First class references. 3549, Textile World Record, Boston, Mass.

Boss Carder and Spinner in a Woolen Mill. Familiar with all grades of woolen and mixed goods. Familiar with all makes of American carding and spinning machinery. Will not go West or South; 40 years of age; first-class recommendations; American. 3294, Textile World Record, Boston, Mass.

COTTON WEAVERS.

Overseer of Weaving or second hand in a cotton mill. Position wanted by a man 29 years of age, American, married. Worked on all kinds of cotton goods, both plain and fancy. Familiar with all kinds of looms, Whitin, Coburn, Mason, Northrup drop boxes, Stafford, Crompton dobbies. Good reference. 3228, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving. Position wanted by a man, 27 years of age, American, married, with experience on prints, cambrics, sateens, drills, corded goods, etc. Worked on Draper, Whitin, Lowell, Mason and Colvin looms. Prefers a position in the East. 3430, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving. Position wanted by a man, 39 years of age, American, married. Worked on all kinds of cotton goods, plain and fancy. On English, Colvin, Mason, Whitin and Draper looms. Could take a position at two weeks' notice. First class recommendations. 3735, Textile World Record, Boston, Mass.

Overseer of weaving, drawing in and twisting. Position wanted by a man 44 years of age; married; English. Has worked on plain twills, sateens, fancy lenos, Jacquard loppetts, also plush goods. Is familiar with Mason, Draper, Whitin and Crompton & Knowles looms. Good references. 3590, Textile World Record, Boston, Mass.

Overseer of silk and cotton weaving. Position wanted by a man 46 years of age; married; German. Has worked on fancy lenos, taffetas, satins, hard silk and skein dyed. Is familiar with all makes of looms. Good references. 3613, Textile World Record, Boston, Mass.

Overseer of Weaving. Worked on ginghams, sheetings, shirtings and dress goods. Familiar with Crompton & Knowles and Mason looms. First-class recommendations, 33 years of age. 3299, Textile World Record, Boston, Mass.

Overseer of Weaving or Cloth Room. Worked on heavy ducks, denims, suitings, checks, lenos, fancy lenos and lappets, from 2s to 200s yarn carded and combed. Familiar with Lowell, Whiting, Crompton & Knowles, Mason and Draper looms. First-class recommendations, 34 years of age, married, American. 3309, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 28 years of age and married. Worked on fancy shirtings, lenos, silk dress goods, lappets and plain goods. Familiar with Jacquard machines, Mason, Crompton & Knowles and Stafford dobbies, looms. 3474, Textile World Record, Boston.

Overseer Cotton Weaving. Position wanted by a man who has had experience on plain goods, twills, sateens on all counts from 18s up. 34 years of age; married. Could take a position at short notice. Worked on Mason, Colvin, Whitin, Lowell and Northrop looms. 3455, Textile World Record.

Foreman of Weaving. Worked on ribbons of all descriptions, silk and cotton labels, tapes and lenos. Will not go to Canada or Maine. Age 34, American. First-class references. 3183, Textile World Record.

Overseer of Weaving, superintendent of weaving or designing. Worked on all kinds of cotton dress goods, also suitings. Familiar with all kinds of American and English looms and machinery. Age 41; English; widower. First-class references. 2058, Textile World Record.

Overseer of Weaving or Supt. in a Cotton Mill. Position wanted by a man 40 years of age, married, an American, worked on plain and fancy cotton goods, lawns, muslins, and on fine and coarse numbers, familiar with all kinds of cotton looms, will not go South, first class recommendations. 3716, Textile World Record.

Overseer of Weaving or designer. Familiar with all kinds of dress goods, lenos, lappets or any kind of fancy Jacquard weaving. Understands all kinds of English and American machinery. Age 46; English; first-class references. 3267, Textile World Record.

Overseer of Weaving. Familiar with shirtings, sheetings, lawns, cambric, ginghams, checks and stripes, union goods, awnings, ducks, drills, light and heavy weight, plain and fancy flannels. 39 years of age, American, first-class references. 3257, Textile World Record, Boston, Mass.

FINISHERS.

Overseer of Bleaching. Position wanted by a man 34 years of age, English, married. Has worked on cotton bed quilts, marcellus and crochet, also yarns. Familiar with the Butterworth machines. Could be employed at short notice. Will not go West or Canada. Good reference. 3836, Textile World Record, Boston, Mass.

Overseer of Cotton Finishing. Position wanted by a man 37 years of age, married, Swede. Has worked on all kinds of cotton goods, plaids and stripes, in all departments of the finishing room. Is familiar with Butterworth finishing machinery. Good references. 3638, Textile World Record, Boston, Mass.

Foreman of Finishing or Calenders. Position wanted by a man, English, 35 years of age and married. Has worked on pocketings, silesias, satteens, linings, etc. Calender and Schreiner finishes a specialty. Understands all kinds of calenders, Buttes stretchers, stenters, dampers, mangles, etc. Good references. 3490, Textile World Record, Boston.

Overseer of Finishing. Position wanted by a man thoroughly familiar with all kinds of cotton goods and all kinds of machines in common use in a colored cotton mill. Has finished ginghams, flannels, blankets, fancy dress goods and endless variety of goods made in a fancy cotton goods mill. Strictly temperate and reliable. First-class recommendations. 1649, Textile World Record, Boston, Mass.

Overseer Milling, Mercerizing and Bleaching. 45 years of age, with large experience in England and Scotland on all classes of cotton goods and the machinery used in this work. 3414, Textile World Record.

Overseer of Grey Room. Position wanted by a man 33 years old. Worked on cottons, cotton warps, worsteds, woolens, and silk warp goods. Could take position at one week's notice. Good reference. 3488, Textile World Record.

Overseer of Tenter Frames in Cotton Mill. Position wanted by a man 44 years of age, married, Scotch. Has worked on sateens, lawns, mull skirtings and shirtings. Is familiar with Butterworth, Stewart and Granger tentering frames. Good references. 3651, Textile World Record, Boston, Mass.

Overseer of Beetling Department. Position wanted by a man, 43 years of age, married, Irish. Has had ten years' experience on cotton goods in this country, twelve years' experience on linen goods in Ireland. Has worked on cotton goods of all counts from 67 by 72 to 96 by 32, also handled all kinds of beetling machines. Will not go South or Canada. Good reference. 3807, Textile World Record, Boston, Mass.

Overseer of Dyeing and starching cotton piece goods. Position wanted by a man who has had a wide experience on all kinds of cotton piece goods, is familiar with jig, two and three box machines, also one box padding machine; 45 years of age, American. Good reference. 3781, Textile World Record, Boston.

Starcher or Assistant Finisher. Position wanted by a man 30 years of age, married and American. Has worked on satinets, dress goods, linings, silesias, pocketings, ducks, shoe goods, trunk cloth, percalines, canvass, etc. Is familiar with all kinds of starching, hot-press and calendering machinery. Good references. 3511, Textile World Record, Boston, Mass.

Cloth Overseer or second hand in dress room. Englishman, 27 years of age, with experience on all classes cotton goods and the different kinds of machinery used in this work, is seeking position. Good references. 3380, Textile World Record, Boston.

Overseer of Finishing of piece goods or assistant superintendent, or chemist; familiar with all kinds of cotton goods, lawns, flannelettes and wash goods. Worked on all kinds of machinery, including Granger and Butterworth machines; first-class recommendations; 31 years of age; married. 3317, Textile World Record, Boston, Mass.

Superintendent of bleaching and finishing cotton goods. Worked on all kinds of cheese cloth, buttercloth, sheetings, quilts, cambrics, long cloth, ducks and drills. Age 31; English; married. 3218, Textile World Record, Boston, Mass.

COTTON CARDERS.

Overseer of Cotton Carding. Position wanted by a man, 30 years of age, single, American. Has worked on combed, Egyptian and Sea Island cotton, fine and coarse number up to 25 hanks. Familiar with American and English carding machinery. Good reference. 3777, Textile World Record, Boston.

Overseer of Cotton Carding or second hand. Position wanted by a man, 24 years of age, American; worked on all classes of cotton goods; familiar with all kinds of cotton carding and drawing machines. Good reference. 3767, Textile World Record, Boston.

Overseer of Cotton Carding. Position wanted by a man 40 years of age, English, married. Worked on Egyptian, Peeler, carder, combed and bleached cotton. Familiar with American and English carding machinery. Could accept a position at short notice and reasonable wages. Good reference. 3827, Textile World Record, Boston, Mass.

Overseer of Cotton Carding. Position wanted by a man 57 years of age, married, American, has worked on all kinds of stock from 3/4 to 1 1/2 staple, all kinds of roving up to 18 hank, first class recommendations. 3713, Textile World Record.

Overseer of Cotton Carding. Position wanted as cotton carder by a Canadian and a hustler, age 42 and married, 27 years' experience in carding department, 13 years as overseer on English and American machinery. Is a good manager of help on colored or white work, fine or coarse numbers. 3719, Textile World Record.

Overseer of Carding. Position wanted by a man 43 years of age, married and American. Has worked on print cloth, cambrics, sheetings, etc., all white cotton. Is familiar with American and English carding machinery. First-class references. 3599, Textile World Record, Boston, Mass.

Overseer of Cotton Carding. Worked on all kinds of yarn. At present employed in a large mill, but will change for a better position. Familiar with all kinds of machinery. Will not go South. 36 years of age; French. 1991, Textile World Record.

Overseer of Carding and Frame Spinning. Worked on all kinds of stock, both high and low. 30 years of age; first-class recommendations. 1759, Textile World Record.

Overseer of Cotton Carding or assistant superintendent. Worked on all kinds of cotton, including cotton waste, Sea Island and down to sweepings. Familiar with all kinds of carding machinery; first-class recommendations; 29 years of age; married. 3323, Textile World Record.

Overseer of Carding. American; 26 years of age; worked in all positions in card room up to overseer. Understands nearly all makes of English and American machinery and has worked on white goods, both fine and coarse. 3346, Textile World Record.

Card Grinder, 38 years of age; English; with experience in good mills. Worked on print cloth and on all makes of English cards. Will go anywhere for good position. Good references. 3426, Textile World Record.

Carder in Cotton Mill. Coarse or fine, white or colored, hosiery, Egyptian, etc. Age 35; Canadian; married. 3029, Textile World Record.

Overseer of Carding. Position wanted by a man 54 years of age, married. Has worked on shirtings and sheetings from 2 to 10 hank roving. Is familiar with all makes of modern carding machinery. Good references. 3561, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 40 years of age, married. Has worked on all kinds of cotton goods and is familiar with all kinds of cotton carding machinery. Good references. 3541, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 35 years of age, married. Is experienced on carded and combed cotton, Peeler, Egyptian, Sea Island, both for yarns and cloth, in coarse or fine numbers. Is familiar with English and American cards and speeders, and American pickers. Good references. 3558, Textile World Record, Boston, Mass.

Overseer of Cotton Carding. Position is wanted by a man 28 years of age, married, English. Worked on a variety of cotton goods and on American and English machinery. Good references. Could take a position in one week's notice. 3547, Textile World Record, Boston, Mass.

COTTON SPINNERS.

Overseer of Ring Spinning, spooling, warping and twisting. Position wanted by a man 29 years of age, married. Worked on coarse and fine white and colored work from 1s to 70s on Whitin, Lowell & Mason frames. Good references. 3500, Textile World Record, Boston, Mass.

Overseer of Spinning. Position wanted by a man 35 years of age. Has worked on all wool, wool and cotton and shoddy mixes. Is an experienced overseer and is familiar with English, Platt & Latham, Davis & Furber, Johnson & Bassett, Bridesburgh, Penn and Furbush mules. Good references. 3554, Textile World Record, Boston, Mass.

Overseer of Ring Spinning. Position wanted by a man 45 years of age, married. Worked on ginghams, sheetings, awnings, denims and all numbers of yarns, both fine and coarse, on Mason, Whitin, Fales & Jinks machines. Good references. 3018, Textile World Record, Boston, Mass.

Overseer of Cotton Spinning. Position wanted by a man, 32 years of age, married, Canadian. Has worked on all kinds of cotton goods and is familiar with all numbers, coarse and fine, all kinds of cotton spinning machinery. Prefers a position in the N. E. States. Good reference. 3785, Textile World Record, Boston, Mass.

Overseer of ring spinning, spooling and warping. Position wanted by a man 32 years of age, American. Has worked on denims, plaids, awnings, checks, lawns, sheetings, lenos, shirtings, etc. Is familiar with Mason, Whitin, Lowell, Davis & Furber and Fales & Jenks, spinning machinery. Good references. 3604, Textile World Record, Boston, Mass.

Overseer of Spinning, Spooling, Warping. Position wanted by a man 35 years of age, married, American. Has worked on all kinds of cotton yarns, from 20s to 120s. Is familiar with Fales & Jenks, Mason, Whitin, Saco & Pettee, and Lowell spinning machinery. Good references. 1788, Textile World Record, Boston, Mass.

Overseer of Spinning, Spooling, Warping. Position is wanted by a man 35 years of age, married, American. Has made yarns from 8s to 80s on all makes of spinning machinery. Worked on all makes of spooling, warping, twisting machines. 3468, Textile World Record, Boston.

Overseer of Ring Spinning. Position wanted by a man 26 years of age. Has worked on all kinds and numbers of cotton yarn. Is familiar with Whitin spinning machinery. Good references. 3684, Textile World Record, Boston, Mass.

Overseer of Ring Spinning, spooling and warping. Worked on all classes of goods, hosiery yarns, long and short staples from 8s up. Familiar with Sayles & Jenks, Mason, Lowell, Whiting and Saco & Pettee machinery. First-class references. 28 years of age; married. 3308, Textile World Record.

Overseer Ring Spinning, spooling and warping wishes a position. A married man, with good experience. Worked on sheetings, shirtings, jeans grain bags. 3152, Textile World Record.

Overseer of Cotton Spinning, 25 years of age, with experience on heavy and medium white and colored goods, 5s to 60s. Denims, chambrays, awnings, napped goods, fine shirtings, etc. Worked on all American ring spinning frames, Draper spoolers and warpers, also twisters and on ball or chain and beam. 3420, Textile World Record.

Overseer of Cotton Spinning. Englishman with experience on mule and frame spinning; worked on 3 1/2 to 200s filling, and on all kinds of novelty yarns, white or colored; accustomed to all machinery used in this work; wants a position in the States. 3437, Textile World Record.

Overseer of Cotton Spinning or superintendent of a small mill. Would accept any reasonable offer. Worked on all grades of cotton goods and cotton yarns from 20s to 100s. Familiar with all kinds of cotton machinery. 44 years of age; American; married. 1882, Textile World Record.

Overseer of Mule Spinning. Position wanted by a man 28 years of age, English. Has worked on white and colored yarns from 6s up to 93s, Egyptian and Sea Island cotton. Is familiar with Platts, Asa Lees, Taylor & Langs, Dobson & Barlow, Curtis, Biddeford, Parr, and Mason mules. Good references. 3542, Textile World Record, Boston, Mass.

KNITTERS.

Superintendent or Overseer of a knitting mill. Position wanted by a man, 27 years of age, American, married; worked on men's, women's and children's hosiery, cotton, woolen and silk. Familiar with Standard, B. & F., Acme, Victor, Brinton and Branson knitting machines, M. & W. Ruth, Brinton, Branson, Scott & William & Pepper ribbers. Will go any place for a good position. First-class recommendations. 3757, Textile World Record, Boston.

Boss Knitter or assistant superintendent. Position wanted by a man 30 years of age, American. Worked on wool, shoddy, cotton, mercerized fleeces, single and double ribbed, and flat goods on Tompkins Bros., Campbell & Clute, Scott & Williams, McMichael & Wildman, Nye & Tredick, Stafford & Holt machinery. 3465, Textile World Record, Boston.

Overseer of Knitting. Position wanted by a man 27 years of age, American, married. Worked on men's, ladies' and children's hosiery, 108 to 200 needle work. Familiar with the new Mayo, Excelsior machines, Huse & Pepper rib heads, tube seamers. Will not go South. Good reference. 3825, Textile World Record, Boston, Mass.

Superintendent or overseer of knitting. Position wanted by a man 41 years of age; married; American. Has worked on all classes of underwear and hosiery on spring and latch needle. Is familiar with all makes of knitting machinery. Good references. 1874, Textile World Record, Boston, Mass.

Foreman of Knitting Room. Age 29; American, unmarried. Fleece of all kinds and gauges. Balbriggan from 20 to 30 gauge. Flat work wool goods. Tompkin Bros. and Campbell & Clute machines. Will not go South. 3204, Textile World Record.

Manager of a Hosiery Mill. Familiar with woolen, worsted and cotton and full-fashioned seamless hosiery. 45 years old, American. First-class references. 1657, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. American, 28 years of age, with experience on flat wool and cotton, all wool sweaters, rib goods of wool, worsted cotton and cotton plaited. Understands nearly all kinds of machinery used in making these goods. 3348, Textile World Record.

Superintendent, or Overseer of Knitting in a Hosiery Mill. Position wanted by a man 33 years of age, single, has worked on ladies', men's and misses' wool, worsted and cotton seamless hosiery on Wildman, Scott & Williams, Ruth and Brinton ribbers, Hepworth and Beatley loopers, Acme and Geor. D. Mayo automatic foot machine. Good recommendations. 3698, Textile World Record.

Overseer of Knitting. Position wanted by a man 34 years of age, English. Has worked on sweaters, jerseys and union suits. Is familiar with Pepper, Nye & Tredick, and Stafford & Holt knitting machines. Good references. 3621, Textile World Record, Boston, Mass.

Overseer of Knitting and finishing, or assistant superintendent. Position wanted by a man 40 years of age and married. Is experienced on all kinds of knit goods, more especially on ribbed underwear, silk hosiery, knit gloves and mittens. Is familiar with Nye & Tredick, McMichael & Wildman, Brinton, Scott & Williams knitting machines and all kinds of sewing machines, lace bar machines, and German Terrot loopers. First-class references. 3556, Textile World Record, Boston, Mass.

Overseer of Knitting or assistant superintendent. Position wanted by a man, 20 years of age, single, German. Has worked on full fashioned seamless hosiery, full fashioned cut underwear. Understands cotton, Paget, knitting machines, German terrot loopers and Lamb machine. Good reference. 3775, Textile World Record, Boston.

Superintendent of an Underwear Mill. Position wanted by a man, 38 years of age, that has had years of experience on all grades of men's, women's and children's underwear. Understands the manufacturing of same from raw stock to finished goods. Familiar with all makes, both latch and spring needle knitting machines and differenc makes of sewing machines. First-class reference. 1780, Textile World Record, Boston.

MISCELLANEOUS.

We have a first class position open for a man to take charge of rag picking in a large shoddy mill. German preferred. For further information address Overseer's Bureau, care of Textile World Record, Boston, Mass.

We have a good position open for one or two first class men on Smyrna rugs for a first class mill. Good wages to the right party that understands the manufacturing of the above. For further information address Overseer's Bureau, care of Textile World Record, Boston, Mass.

We are continually having inquiries for fixers on knitting machines, both underwear and hosiery, also sewing machine fixers. For further information address Overseer's Bureau, care of Textile World Record, Boston, Mass.

We have a first class position open for an experienced man to take charge of knitting on sweaters on Stafford & Holt, Leighton, Wildman, Creelman sock machines, flat machines with jacquards. For further information address Overseer's Bureau, care of Textile World Record, Boston, Mass.

Overseer of Dressing, Spooling and Winding. Worked on all kinds of woolen and worsted men's wear and ladies' dress goods. First-class references. 31 years of age; Scotch. 3269, Textile World Record, Boston, Mass.

Wanted: Situation as office manager or bookkeeper by a capable man of long experience. Can take entire charge, or will accept any position paying a fair salary if in line of advancement. Good references. 3521, Textile World Record.

Overseer Twisting, spooling and warping in a cotton mill. Position wanted by a man 33 years of age, married, American. Worked on coarse and fine, white and colored cotton goods. Familiar with Draper, Collins Bros. and Whitin and Lowell machines. Wants New England only. Good reference. 3830 Textile World Record, Boston, Mass.

Overseer of Dyeing. Position wanted by a man 48 years of age, American, married. Has worked on raw stock, piece dyes, yarns and blue vats. Worked in some of the leading mills for a number of years. Could take a position at short notice. 3835, Textile World Record, Boston, Mass.

Bookkeeper in woolen, worsted or yarn mill. Position wanted by an American, 33 years of age, married. Has the best of references. 3477, Textile World Record, Boston.

Overseer of dressing. American; married. Wool, worsted and cotton worsteds. 3165, Textile World Record.

Overseer of Winding, filling, warping or spooling. Has had considerable experience in keeping mill books. Would consider position taking charge of shipping. American; age 26; single; good references. 3242, Textile World Record.

Overseer of Dyeing. Men's wear and dress goods, loose and wool, piece dyes and yarns. Good experience. 3161, Textile World Record.

Boss Dyer, scourer and bleacher in a knitting mill. Worked on all grades of knitted underwear. First-class references. Will not go West or to Canada. 41 years old; married. 3004, Textile World Record.

Overseer of Finishing and Dyeing. Worked on wpolens, worsteds, men's wear and ladies' dress goods. For the past 7 years with a first-class mill; 39 years of age; good references. 1210, Textile World Record, Boston, Mass.

Overseer or second hand's position. Understands twisting, warping, spooling and cone winding. Worked on all kinds of cotton yarns. Will not go West or South. 3112, Textile World Record.

Boss Dyer in a 3 to 5 set mill, or second-hand dyer, raw stock and shoddy. Wants Mass., R. I., or Conn. 3187, Textile World Record.

Foreman Dyer wants position. Age 27; English; married. Cotton and wool in raw stock, wool stock, cotton and worsted yarn and piece dyes, also hosiery. Will not go West or South. Good experience. 3079, Textile World Record.

ARE YOUR MILLS GROWING?

The question of expansion to meet the growing demands of trade is becoming a serious problem with many manufacturers, and those in this position find that much depends upon the plant having been laid out with an eye to future growth.

Now one of the vital points in a manufacturing establishment is the power plant and its adaptability to increased demands affects largely the question of growth for the whole factory.

Write for prices on "PLYMOUTH" Manila and Sisal baling rope.

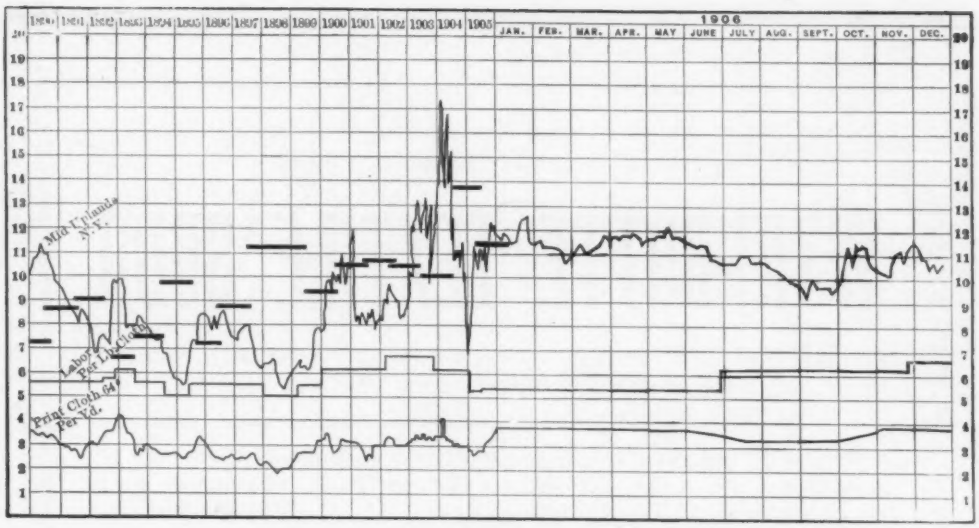
The matter of installing power equipment intended to meet the requirements of future growth of the business has been greatly simplified by the use of rope drives as a means of distributing power.

Our book on "Rope Driving" goes into the whys and wherefores of this proposition and also describes the many other advantages of rope transmission. Sent free to power plant owners.

Plymouth Cordage Co.

ESTABLISHED 1824

North Plymouth Mass., U. S. A.



The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

Cotton Market.

The public market for cotton has been quiet, and quotations on the exchanges have been on the down grade. Private sales, however, tell another story and cotton buyers have found it difficult to get the grades required. Prices have been considerably above the exchange quotations, and the difference has shown plainly how far the public exchanges fall short of reflecting the conditions in the cotton trade. The speculative market has been depressed by high rates for money and the large receipts of cotton. Following is the Chronicle estimate of receipts at ports from Sept. 1 to Dec. 22, compared with the figures for several preceding years:

1906	7,314,172 bales
1905	6,581,031 bales
1904	7,471,709 bales
1903	6,559,898 bales
1902	6,410,325 bales
1901	6,338,349 bales

The same authority estimates the visible supply on Dec. 21 at 4,931,913 bales, as compared with 5,112,236 bales at same time in 1905, 4,611,550 bales in 1904 and 3,968,533 bales in 1903.

Texas, Abilene. It is reported that a project is under way for erecting a cotton mill here with equipment of 17,000 spindles and 285 looms.

Tennessee, Memphis. Col. I. F. Peters, commissioner of the Industrial League, is reported as negotiating with parties relative to establishing a cotton mill here.

*Massachusetts, Worcester. Several parties are reported as negotiating for the purchase of the Thomas Williams Mill.

North Carolina, Bessemer City. The Smith Cotton Mill Company has been incorporated with capital stock of $100,000, privilege of increasing to $200,000. Details of the plant have not yet been decided upon. J. A. Smith and J. A. Pinchback are mentioned as interested.

North Carolina, Hendersonville. S. B. Tanner of the Henrietta Mills, Henrietta, is reported as interested in establishing a large cotton mill at this place.

WONALANCET COMPANY
NASHUA JUNCTION, N. H.
Manufacturers of a superior grade of
CARDED COTTON
Gulf and Peruvian—in the white
To Meet the Most Exacting Needs of
WOOLEN MILLS

WEIMAR BROS.
MANUFACTURERS OF
Cotton Mercerized Tapes,
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
Phone Connections.
Works, 2046-48 Amber Street, PHILADELPHIA, PA.

As we begin the new year we consider it a special privilege to extend to the many friends and users of

WYANDOTTE TEXTILE SODA

our sincere thanks and appreciation for the confidence and patronage which they have so cheerfully given in the year just closed.

We do not feel that it is necessary to impress you with the good qualities of our cleaner, as the growth in frequency and size of your orders prove that Wyandotte Textile Soda has made your acquaintance both pleasing and profitable.

Our plans for 1907 contemplate leaving no stone unturned in our efforts to continue the peerless qualitites of our Wyandotte Textile Soda and the matchless results which it produces.

As in the past, we want all our friends, both old and new, to feel that it is ever our purpose to study the conditions and anticipate the needs of the mill man.

To what degree our efforts have in the past proved beneficial is best told by the success and popularity of this soda.

In extending to you the season's greeting it is our sincere desire that the coming years may continue to strengthen the cordial relations which now exist.

None Genuine except with a card bearing this Trade Mark

In Every Package.

The J. B. Ford Co.,

SOLE MANUFACTURERS,

Wyandotte, Mich.

THIS SODA HAS BEEN AWARDED THE HIGHEST PRIZE WHEREVER EXHIBITED.

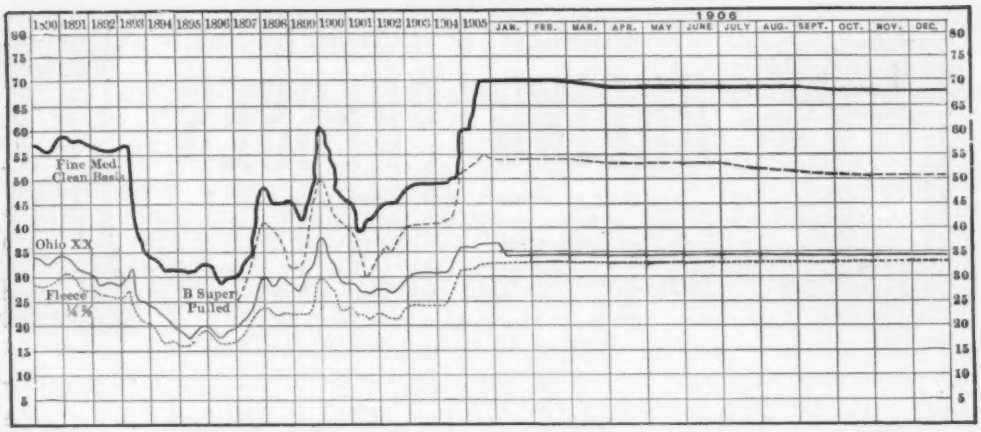

1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905
1906
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Fine Med. Clean Basis
Ohio XX
Fleece ¼ ⅜
B Super Pulled

CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

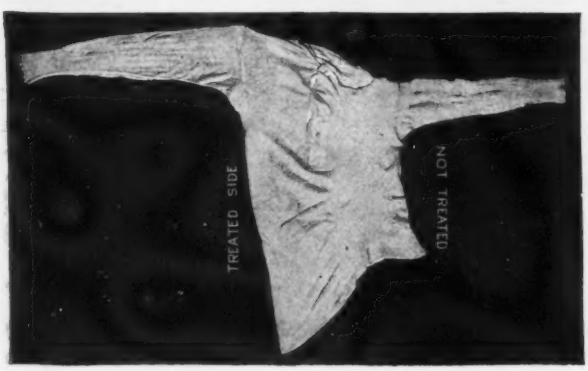
Wool Market.

Business has been interrupted by the holidays and the taking of inventories at the beginning of the year. Despite these factors, however, the volume of sales has been well maintained. Prices are firm on all lines and stocks are unquestionably small. The strength of foreign wool markets has had great influence on the home market. The imports of wool by dealers have been quickly taken up by manufacturers. The call for coarse wools has improved. In fact, the new year begins with conditions extremely satisfactory to owners of wool. It is not expected that prices will advance. The general sentiment among the best informed traders is that prices are as high as the consuming power of the country will stand. The present level has resulted in the substitution of cotton for wool in largely increased quantities. Higher prices for wool would hasten the change of fashion to cheviot effects and increase the consumption of wool shoddy, which is now neglected. Marking wool prices up would, it is believed, reduce the use of it largely and thus bring about a speedy collapse of the inflated values. The imports of wool are increasing, although the total for the ten months ending October is considerably below that for the corresponding period of the preceding year.

Massachusetts, Monson. The Somerset Woolen Co. has resumed operations after being closed for several days during installation of a new engine.

Massachusetts, Middleboro. The Nemasket Mills have placed order for 70 new looms to be installed in the plant.

TRADE IS DEMANDING NON-SHRINKABLE WOOL



BECAUSE THE

FORWOOL Never-shrink TRADE MARK

Registered

IS WORKING A REVOLUTION

GET IN LINE

For information write

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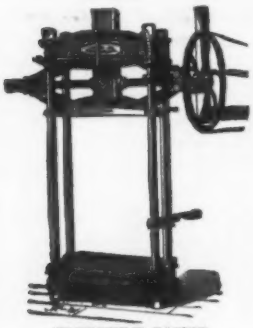
REAL ESTATE TRUST BUILDING
PHILADELPHIA, PA.



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BOOMER & BOSCHERT

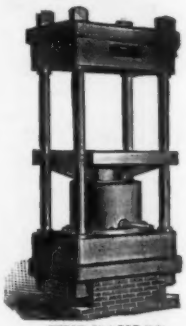
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water S., SYRACUSE, N. Y.
Southern Agent, A. H. WASHBURN, Charlotte, N. C.



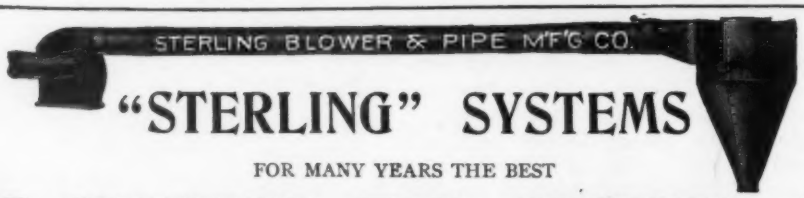
HYDRAULIC.

Handles heavy cases in a Time-Saving Way—The Economy Steel Tiering Machine

Goods are put in place with ease and economy. The largest amount of stock can be stored in the smallest possible space and yet be instantly accessible. In use in representative mills. Investigate its merits and 'twill be in use in yours. Write for prices.

Economy Engineering Co.

58-64 N. Jefferson St.
Chicago, Ill.



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FOR MANY YEARS THE BEST

DUST COLLECTING, WOOL CONVEYING, ETC.

STERLING BLOWER & PIPE MFG. CO.

Write for "1906" Catalog.

HARTFORD, CONN., 1027 Huyshope Ave. New York Office, 136 Liberty St.

Your Safety Depends on the Efficiency and Strength of Your Valve.
BETTER BE SAFE THAN SORRY.

Water-Relief Valve.

BUY CROSBY STEAM APPLIANCES WHICH ARE RELIABLE

WRITE FOR CATALOGUE.

Steam Engine Indicators
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Brandon Rubber Pump Valves
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Feed Water Regulators
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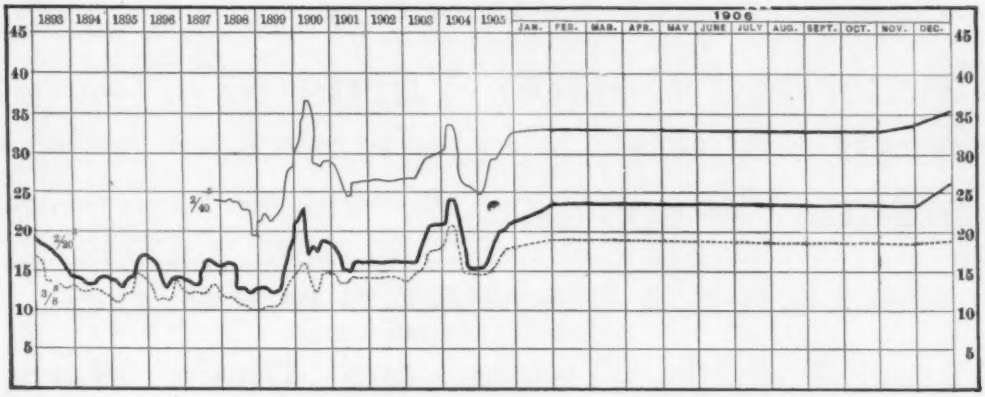
ENGINE—BOILER AND MILL SUPPLIES

Pop Safety Valve

CROSBY STEAM GAGE AND VALVE CO.

Stores, BOSTON, NEW YORK, CHICAGO, LONDON. Office and Works, BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

Cotton Yarn Market.

This market has continued strong the last month, sellers being in many cases unwilling to accept orders for future delivery on account of contracts already unfilled. The drop in raw cotton has apparently had no effect on the price of cotton yarn as spinners have found it very difficult to get the grades they require for the fine goods. For low grade yarn the market has been somewhat easier. Even for the coarse counts it has been a sellers' market and yarn mills are able to count upon a full production for many months ahead.

The demand for fine counts shows no sign of slackening. The sales have in many cases been made at prices above the current market quotations. We quote as follows:

Eastern Cops.

6s	20½
8s	20¾
10s	21¼
14s	22¼
16s	22¾
18s	23¼
20s	23¾
22s	24¼
24s	25¼
26s	26¼
30s	27¼
34s	28½
36s	29½
40s	33

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	23
14s	23½
18s	25½
20s	26½
24s	29
26s	31
30s	34
36s	39
40s	45
45s	48
50s	55
55s	59
60s	62

Eastern Two-Ply Warps, Carded Peeler.

2/30s	36
2/36s	39
2/40s	46
2/45s	49
2/50s	56
2/60s	63

Egyptian Weaving Yarns.
Single Skeins Combed.

30s	41
36s	43
40s	46
45s	50
50s	54
55s	58
60s	62
70s	67

Philadelphia Market.

The yarn market has held very firm during the last month and it is still a seller's market. The only numbers that have shown any weakness at all are the coarse counts, in which spinners can use low grade cotton. All of the better grades of cotton are being held firmly for premium prices, and the recent decline in the cotton market has had little or no effect on the price of better grades of cotton yarn.

Southern correspondents report that cotton is withdrawn from the market on all the breaks in prices. The farmers that have cotton at present are

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.

The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS.

4s to 60s.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops From 30s to 50s from American & Egyptian Cotton

in position to carry it, if they cannot get a price that is satisfactory.

Business continues good in all lines and the demand for yarn will probably keep the market bare of stock and hold prices firm for some months to come.

Spinners seem to be well supplied with orders, especially on numbers from 20s up.

Combed yarns are holding very high in price, and are practically unattainable for prompt delivery.

The prices quoted represent the spinners' idea of values for such delivery as they can make. Spot market in some instances commands a premium.

Southern frame spun cones:—

7s and coarser	20
8s and 9s	20
10s	20½
12s	21
14s	21½-22
16s	22½
18s	23½
20s	24
22s	25
24s	26-27
26s	28
30s	29-30
40s	38
50s	45

Southern high grade mule yarn:—

Cones.

10s	22
12s	22½
14s	23
16s	23¾
18s	24½
20s and 22s	25½-26½
24s	27½

Southern frame yarn, lower grades:—

6s and 8s	19¾
10s	20

Eastern cones (high grade quality):—

10s	23
12s	23½
14s	24
16s	24¾
18s	25½
20s and 22s	26½-27½

Skein yarn (mostly Southern):—

4s and 8s soft	19
10s to 12s	19½-20
14s to 20s	20½-22
22s	22½
14/2	21-21½
16/2	22½
20/2	25
30/2	32
40/2	43
16/3 slack	22
12/3 slack	21

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
73 Leonard Street, NEW YORK.
Brown Building, 185 Summer Street, BOSTON, MASS.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
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A. D. Salkeld & Bro.
COMMISSION MERCHANTS
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COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

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TOLAR & HART
Cotton Yarns and Cotton
TEXTILE BUILDING
Members of New York Cotton Exchange
66-72 LEONARD ST. NEW YORK

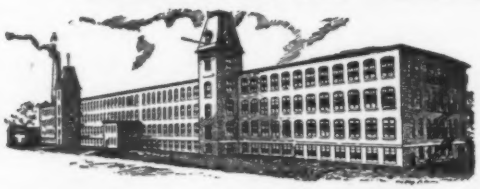
Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS
MERCERIZED YARNS } ALL NUMBERS FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

LUDWIG LITTAUER,
Successor to MOELLER & LITTAUER.
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK.

C. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.

Formerly E. JENCKES MFG. CO.

Carded and Combed Cotton Yarns for Weavers and Knitters
Double and Twist Yarns for Woolen Trade.

PAWTUCKET, R. I.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND
FITCHBURG, MASS. WARPS

Ballou Yarn Co.

PROVIDENCE. R. I.

Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers

GASSED YARN SPECIALTIES

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

Wm. Chalmers & Co.

(Incorporated)

Imported and Domestic Cotton Yarns.

Turkey Red Yarns a specialty.

Correspondence solicited.

43 Leonard St. - - NEW YORK.

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

2124 to 2130 East York St., PHILADELPHIA, PA.

Wiscasset Mills Co. | Patterson Manfg. Co.
Efrid Manfg. Co. | Tuscorora Cotton Mill.

HIGH GRADE HOSIERY YARN

White and Colors. All Numbers.

Sewing Twines on Cones and Tubes.

SPECIALTIES IN WEAVING YARN.

Black and white. Double and twist for woolen trade.

CANNON MILLS, 55 Leonard St New York.

THE RAVINE MILLS CO.

MANUFACTURERS OF

COTTON WARPS

In White and Colors on Beams and Jackspools

Specialty of Fast Black Twist on Jackspools.

VERNON, CONN.

Indian Orchard Company
Cotton Warps and Yarns.
In Gray and all Colors, Single or two or more Ply, and Cable Cord.
Novelty Yarns.
in Various Patterns, Colors and Twists.
Carded and Colored Cotton
For Mixing with wool, Machined or in Roving.
Indian Orchard Mass

8/3 carpet	19
8/3 slack	19
9/4 slack	19

Warps (Southern):—

10s to 12s	20-20½
14s	21½
16s	21½-22
20s to 22s	23-23½
26s	26
14/2	22
16/2	23
20/2	25
24/2	28
30/2	32
40/2	44

Mixed colored yarns (mock twist, half colors):—

6s to 10s	20½-22
12s to 14s	22½-23
16s to 18s	24-25

Mock Egyptian, 2c. advance over white.

Egyptian, 7 to 8c. above best quality white.

Worsted Yarn.

The worsted yarn situation is all that can be desired from a spinner's standpoint and the outlook is good for the best season known in many years. In the meantime spinners continue very busy on the light weight yarn orders, on mixes, and also on white yarn, and some weavers have looms idle on account of being unable to secure yarn for immediate delivery. Many orders have been booked for yarn to be delivered for the heavy weight season for delivery to begin February and March. Some of the spinners have taken so many orders that they refuse to sell more yarn until the situation is more fully developed, and some have advanced prices fully 10 cents a pound to slow down orders for the present. Of course not all spinners are doing this, but none are anxious to take too many orders for future delivery.

The orders secured have been largely for 2/16s, 2/18s to 2/26s and much single yarn from 10s to 24s for the filling of mercerized worsteds and all in 3/8 blood to 1/2 blood quality. There will be much more grey mixed yarn sold during the present light weight season, but not many orders are being taken for this class of yarn for the coming heavy weight season as all the orders placed are for straight white yarn.

Established 1863 *Incorporated 1899*

W. Warren Thread Works

Makers of High Grade

SPOOL COTTON

of every description for the manufacturing trades

Mills: Westfield, Mass.

LINEN YARN IMPORTER.

HUGHES FAWCETT, 115 Franklin Street, NEW YORK.

Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps,
Cones, Cops,
Tubes
COTTON YARNS
426 and 428
Market St., Phila.
Theo. H. Strouse & Co.

Box Shook
and
Lumber
THE CONNECTICUT BOX CO.
New Haven, Conn.

FRANK A. TIERNEY,
206 West Broadway, New York, N. Y.
WOOL, SILK, MOHAIR, CAMEL HAIR, RAMIE.
Ramie Tops, Ramie Noils, Silk Tops, Silk Noils,
Ramie Yarns, Silk Yarns, Silk Noil Yarns.
Prepared Tussah Silk for Woolen Manufacturers, ready for immediate use on regular woolen machinery.

G. J. MERWIN, Prest. and Gen'l Mgr. **FREDERICK A. BETTS, Sec'y and Treas.**

The Merwin Paper Company
Hartford, Conn.
Press Papers and Fender Boards
Correspondence Solicited
Mills at Rainbow, Conn. **Address Inquiries to Rainbow, Conn.**

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at
Thornton, R. I.

Office
100 Boylston St., Boston, Mass.

French System. **B. F. BOYER CO.,** Bradford System.

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, Delaware and Cooper Streets. **CAMDEN, N. J.**

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

WORSTED YARNS

RICHARD CAMPION.

SELLING AGENT FOR

Bristol Worsted Mills,
Highland Worsted Mills.

300 Chestnut Street,
PHILADELPHIA, PA.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.
Mills: Frankford, Pa.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

YARNS Solis, Boston.
77
SUMMER STREET.
ANDREW J. SOLIS, Jr. & CO.

HOFFMAN, DeWITT & McDONOUGH CO.,

Diamond Stay Bindings
TRADE MARK

Manufacturers of
Tapes, Webbing and Bindings.

COTTMAN and G STS., PHILADELPHIA
Ryer's Station, P. & R. R. R.
Bell Telephone, 203 Cheltenham.

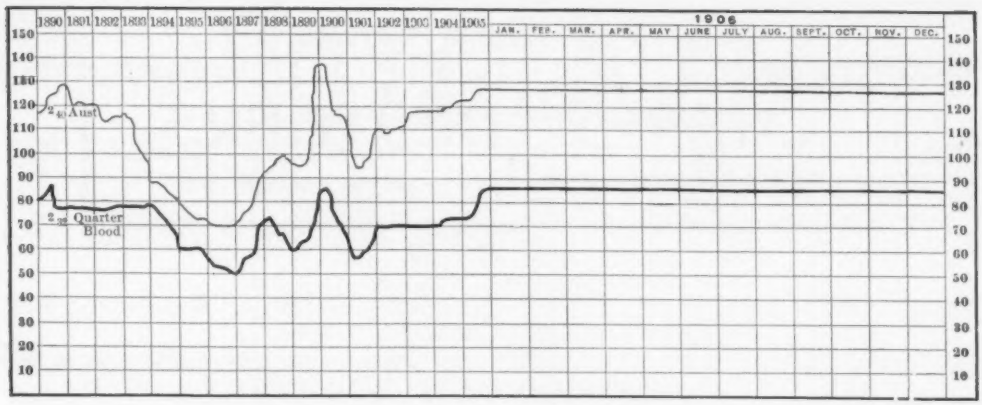


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

Prices for yarns are very firm for two reasons. One is that staple wool is going to remain high for the remainder of the year and the other is that spinners have booked as many orders as they care for until later. From what we can see we believe that the weavers have not covered for more than one-third of their requirements for the heavy weight season and many more orders must be placed in March if the business comes anywhere near the expectations of the weavers. Some of the weavers have covered heavily, anticipating their requirements for the heavy weight season as it has been necessary of late to cover before putting samples on the market. Many of the orders placed are not for delivery before February and March, although some of the weavers are drawing from their heavy weight purchases to fill light weight orders.

Those weavers who placed their orders in October bought their yarn the cheapest; while some have covered largely, some have proceeded more cautiously. One weaver when he was approached for an increase of his order said that he did not care to increase the order then, but in about two or three weeks his goods would be opened up and he would then be in a position to determine whether he would require more yarn; he did not care to increase his orders until he knew more about the goods situation. Those weavers who have ordered only a small portion of their yarn requirements will be obliged as soon as the season opens up to cover promptly for whatever business they secure.

Some of the weavers, especially those on linings, have advanced the price of their goods still further as they are unwilling to make the cloth without a proper return. The price of heavy weight cloth has been established and buyers last year reduced their stocks on worsted cloth to a great degree, so that the expectations for a good business should be realized. As soon as the heavy weight business is under way and styles established many of the cotton spinners who twist worsted with cotton yarn will be in the market for 12s. The bunting weavers continue busy on government contracts and with good prospects for other business from their regular customers. For the present they are well covered for their worsted yarn.

We understand that the Cutters' Association appointed a committee to see one of the largest mills in the country and try to adjust certain claims for cloth which pulled out at the seams. The head of the concern refused to see the delegation and the matter was not adjusted. The dress goods manufacturers are buying much single grey mixed filling French spun, but the warps are grey mixed cotton yarn. The weavers have been busy on this class of work and this cotton yarn has displaced much 2/36s worsted. If the spinners were dependent on the dress goods weavers for business not many orders would be secured. Many orders have been placed for single French spun yarn in 40s to 50s by the hosiery and underwear knitters and in 10s to 26s by the weavers. Many of the knitters have covered themselves for the season and not many new orders will be placed until next year.

We quote:

2/40s Australian	1.28
2/40s Delaine	1.23
2/36s 1/4 to 3/8 Blood	95 to 1.00
2/32s 1/4 Blood	85-87½
2/20s 1/4 Blood	82-85

CHENEY BROTHERS

Silk Manufacturers. So. Manchester, Conn.

Trams, Organzine and Spun Silks in the hank, or on spools and cones for woolen manufacturers.

Silks for electrical uses, insulation and special purposes made to order.

Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Dress Silks, Satins, Linings, Printed Pongees, Foulards and Decorative Silks; Upholstery Goods, Ribbons, Sashes, Plushes and Velvets.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

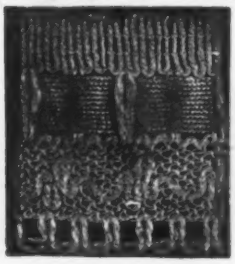
SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.



GEORGE W. CHAPIN,

BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. **TAPES** Common, Twilled, Superfine and Plain 12 to 35s, white and colors on spools.

YARNS Cops, Skeins, Warps, Tubes and Cones. **THREADS** on Spools, Tubes, Cones, Unbleached, Bleached and Colors for Manufacturers' use.

CROCHET LACE EDGINGS Latest Styles in Pant Laces.

229 Church Street 231 . . PHILADELPHIA

NON-FLUID OILS

THE BEST ECONOMY IS TO USE THE BEST.

This is true of many things but to a remarkable degree of textile machinery lubricants. The best lubricant saves hundreds of times its value in coal, repair bills, accidents and delays. NON-FLUID OILS represent a distinct advance over fluid oil and greases. They do not drip like oils, do not waste power like greases. Better than fluid oils; better than greases.

It will pay you to investigate them.

Write us for free samples, descriptive literature and prices.

THE NEW YORK and NEW JERSEY LUBRICANT CO.,

Dept. H. 14-16 Church Street, New York City.

Woolen Yarn.

During the last two weeks there has been a marked improvement in the inquiry for commission spun yarn as well as sale yarn. Judging from these inquiries all lines are beginning to feel the improved conditions and later it will be a question of what work not to take rather than a desire for more business. Many of the old customers who had machinery space are trying to get it back but find that spinners are no longer able to give them the production previously allotted. The hosiery knitters, believing that wool is as low as it will be, are anticipating future business and have covered largely on a low basis.

There have been some good orders placed by hosiery knitters for 5 run and 6 1/2 run white merino. Some large orders are pending, and still other orders will be placed in case wool reaches a little lower level. Some hosiery knitters are employing much outside spinning to take care of their overflow orders.

The dress goods manufacturers are getting ready to swing over to broadcloths and plaids, and this demand will employ much outside spinning machinery and will displace the present cheap cotton cloth that is now being made. Much of this yarn will be sold outright and this will make a good business for sale yarn. The heavy weight worsteds are being cheapened by a little woolen spun yarn used with the worsted in the warp.

The underwear knitters throughout New York State have been taking many orders for underwear and are fast filling up with business. Some of the mills are trying to buy the different material used on a low basis, but are finding it impossible to cover at these low offers. Last year all the mills loaded up early in the year and then bought no more during the season. At the present time the indications are that they will hold off and later in the season, say March, pay extreme prices.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Secy.

Established 1860—Incorporated 1893.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

WILLIAM B. CHARLES,

Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,

For the Underwear Trade.

AMSTERDAM, N. Y.

Boston Office, 200 Summer St.

JOSEPH M. ADAMS CO.

WOOLEN YARNS,

Carpet Backing and Rug Yarns a Specialty.

ARCOLA MILLS,

Main St., foot of Centre St., Manayunk, Philadelphia.

Knitting and Weaving

YARNS.

Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE,

226 CHESTNUT STREET,

Philadelphia, Pa.

A Barrett Specification Roof

32 Years Without Repairs

The buildings shown are the Mechanic Mills at Fall River, Mass. In 1874 they were covered with 50,000 square feet of Gravel Roofing, laid along the lines of THE BARRETT SPECIFICATION.

Last year, *after 32 years of service, with no expense for repairs*, the roof was re-covered with the same material.

What other roofing can show 32 years of service at a total cost of *less than one-fifth of a cent per square foot per year?*

This is the kind of service that has made BARRETT SPECIFICATION ROOFS standard and more widely used on first-class buildings than all the other styles of roofing combined.

When ordering your roof covering, it is well to remember that a BARRETT SPECIFICATION ROOF cannot rust like one of metal, or warp and rot like wood, and that it gives you *six pounds* of material to the square foot, as against *one-half to one pound* in "ready roofings."

Also, and very important, it is self-maintaining, and requires no expense for painting or coating to insure its durability. Any reliable roofer will guarantee a BARRETT SPECIFICATION ROOF, absolutely for ten years; in other words, it gives real protection at minimum cost.

Illustrated booklet covering the roofing subject thoroughly, mailed free on request to nearest office.

BARRETT MANUFACTURING COMPANY

New York Chicago Philadelphia Cincinnati Minneapolis Cleveland
Kansas City Boston New Orleans St. Louis Allegheny

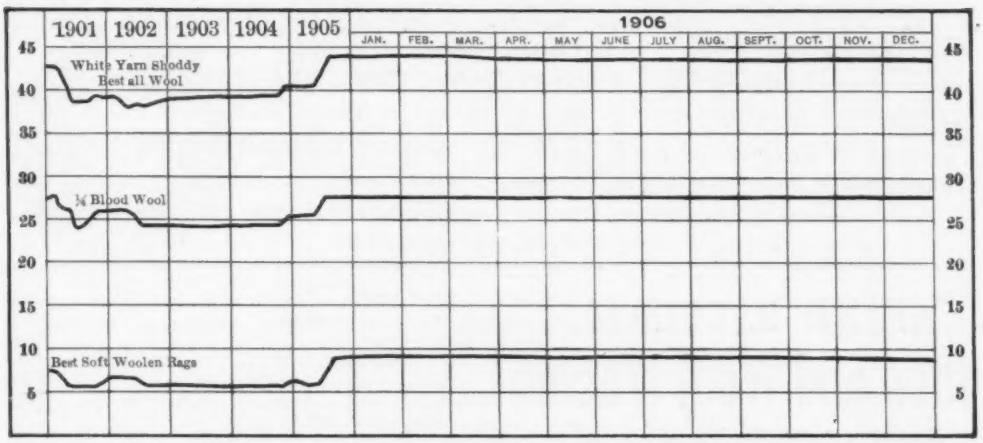


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

Rag and Shoddy Market.

The advent of the new year has brought nothing to disturb the even tenor of this market. Fashion has continued adverse to a revival of demand, and wool prices have not changed in a way to influence the market for wool substitutes. Dealers continue to hope for better things and on a few lines there have been indications of an improvement. The unexampled prosperity of the country makes it certain that a pronounced revival of business in the rag and shoddy market would follow a return of cheviots to popular favor. In the meantime dealers must content themselves with the very moderate amount of business that results from a continuation of the present demand for the worsted finish.

Buyers have purchased stock of all kinds very sparingly. We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	44-47
White knit, all wool, best fine	35-40
White knit, No. 2	30-35
Light yarn, extra fine	30-35
New pure indigo blue	28-30

Merino.

Fine light, all wool	24-27
Medium light, all wool	15-17
Fine black, all wool	25-27
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 1	18-20
Medium dark, all wool, No. 2	15-16
Red knit stock, strictly all wool	20-22
Red flannel, all wool	20-22
Dark blue for hosiery, strictly all wool, No. 1	20-22
Dark blue for hosiery, not all wool, No. 2	15-18

WOOLEN RAGS.

Fine merchant tailors	10-11
Choice light colors	13-14
Browns	12-13
Blacks	9-10
Fine blues, plain	9-10
Fine dark	12-13
Medium dark	7-8

Worsteds.

Blue	15-17
Black	21-22

Serges.

New black	16-18
New blue	14-16

Flannels.

New scarlet	19-20
New blue	15-16
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	9-9½
Old white flannels	23-24
White flannels, No. 2	11-12
Old red flannels	13½-14
Light blue flannels	7½-8½
Old blue flannels	9½-10
Old plaids	7-8½
White stockings	24-25
White hood stock	24-25
Clear hoods	9-10
Blue stockings	8½-9
Fancy stockings, No. 1	9½-11
Gray stockings	10½-11
Black stockings	11-12
Knit stock comforters	7-8
Red knit	13½-14
Light gray knit	10½-11
New light fancies	14-15
New fancies	11-12

Merinos.

Light, fine	16-17
Light, coarse	7¼-7½
Fine, dark	14½-15½

L. J. WING MFG. CO., 136 Liberty St., N. Y.,

Manufacturers of

WING'S DISC FANS, EXHAUSTERS, BLOWERS,

High Speed Steam Engines, Electric Motors, Acetylene Generators, Laundry Irons, etc. Also

WING'S FAN AND TURBINE ENGINE COMBINATION

For Forced Draft for Boilers, Humidifying, Removing of Steam, Vapors, etc. Something New and Valuable,

SAVES COAL, BURNS SMOKE, ADDS CAPACITY TO BOILERS.

WRITE FOR PARTICULARS.

WILLIAM B. CHARLES,

Cotton and Wool Wastes

Amsterdam, N. Y., U. S. A.

COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

Boston Office: 200 Summer Street.

SHODDY

W. H. H.
SLACK & BRO.
SPRINGFIELD, VT.

Established 1871

FLOCKS

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN CO., MANUFACTURERS OF

.. Shoddies ..

of every description. Capacity 7,000,000 pounds per annum.
Custom Carbonizing and Garnetting a Specialty.

New York Office:
140 DUANE STREET. RIVERDALE, NORTHBRIDGE, MASS.

Soft Clear Water.

We-Fu-Go and Scaife Water Softening Plants, and Scaife Water Filters can be seen in actual operation in Textile Plants in any part of the U. S. Apparatus designed to suit each special case, and we guarantee results. Write for Illustrated Catalogue.

WM. B. SCAIFE & SONS CO., Pittsburgh, Pa.

Coarse, dark	6½-6¾
Blue	11-12
Black—seamed	15-16
New black	18-20
Small	4¼-4¾
Bunting	7-10

FLOCKS.

Shear, fine white, all wool	10-12
Fine indigo blue, all wool	7-8
Fine black and blue, all wool	6-7
Fine dark, all wool	2½-4
Gig, fine, all wool	2-3
No. 1 black, all wool cut	6-10

COTTON WASTE.

No. 1 Spinners	9½-9¾
No. 1 Machine Cop	7-7½
No. 2 Machine Cop	6½-7
No. 1 Cop	7-7½
No. 1 Card	8-8½
No. 2 Card	7-7½
No. 1 Oily Card	4½-5
No. 2 Oily Card	3½-4
Peeler Combing	8½-9
Egyptian Combing	8½-9
No. 1 Linters	5-5¼
No. 2 Linters	4¼-5
White Clips	4½-5
Colored Clips	1½-2¼

DYESTUFFS AND CHEMICALS.

Acids.

Acetic, 100 lbs.	2.40-2.65
Citric, domestic	45-45½
Oxalic	9-9½
Sulphuric, 60 deg., 100 lbs.	1.00-1.20
Muriatic, 18 deg.	1.15-1.75
Tartaric crystals	27¾-28

Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.35-2.40
Alum, lump	1.75-1.80
ground	1.85-1.90
powdered	2.75-2.80
Aqua ammonia, 16 deg.	3¾-4
Ammoniac, sal., gray	6-6½
Borax, bbls.	7½-8½
Brimstone, crude, foreign ton	22.25
Copperas	47½-57½
Cream tartar, crystals	22¼-22½
Fuller's earth	
powdered, 100 lbs.	80-85

FIRE, LIGHTNING, WINDSTORM.

The HOME INSURANCE COMPANY NEW YORK

Organized 1853. MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $3,000,000.

ASSETS January 1st, 1906	$21,239,052
LIABILITIES (including Capital)	12,518,551
NET SURPLUS OVER ALL LIABILITIES	8,720,501
Surplus as regards Policy-holders	11,720,501
Losses Paid Since Organization Over	99,000,000

HOME losses at San Francisco cannot exceed $2,000,000. Note amount of net surplus.

HOME Policy-holders everywhere have protection, which is sure, notwithstanding conflagrations anywhere.

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

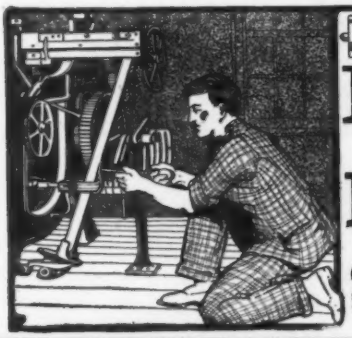
ELBRIDGE G. SNOW, President.

EMANUEL H. A. CORREA, Vice-Pres. AREUNAH M. BURTIS, Secretary.
FREDERIC C. BUSWELL, Vice-Pres. CHARLES L. TYNER, Secretary.
CLARENCE A. LUDLUM, Ass't Sec'y. HENRY J. FERRIS, Ass't Secretary.

Glauber's salt	50-60
Potash, chlorate, crystals	8¾-9¼
powdered	9-9½
carbonate	3½-4
Soda ash, carbonate, 48 per cent.	1.20-1.30
high test	1.00-1.25
Soda, bicarbonate, American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.85-1.90
Sal. English	85-90
Sal. American	80-85
Sulphate, alumina	1-1¼
Vitriol, blue	7¼-7½

Dyestuffs.

Acetate of soda	4¼-4½
Acid, picric, best crystals	21-26
tannic, commercial	32-35
Albumen, egg	56-75
blood	20-27
Alizarine, red	15½-16½
Aniline, oil	11-11½
salt crystals	9¾-10
Antimony salt, 65 per cent.	25-27
Bichloride of tin, 50 per cent.	12¼
45 per cent.	9½-10½
Bichromate of potash, American	8⅛-8⅜
Bichromate of soda	6⅛-6⅜
Bisulphite of soda	80-1⅜
Cutch, mat	4½-5
boxes	4¾-6
Dextrine, imported potato	5¾-7
corn	2.75-2.90
Divi-divi, ton	50.00
Flavine	23-40
Fustic, stick, ton	17.00-20.00
young root	45.00
Gambier	4¼-5
Hypo. of soda, Am. bbls. cwt.	1.35-1.50
Indigo, Bengal, low grade	55-65
medium	62½-75
high grade	77½-90
Kurpahs	50-60
Gautemala	35-70
Manila	45-50
Madras	45-50
J. (Synthetic)	18-20
Indigotine	95-1.80
Logwood, stick, ton	18.00-22.00
roots	16.00-18.00
Madder, Dutch	13½-15
Muriate of tin, 36 degrees	9-9¼
52 degrees	15-15¼
Nitrate of iron, commercial	1⅛-1½
Nutgalls, blue Aleppo	20-23
Persian berries	7
Phosphate of soda	1.90-2¼
Prussiate of potash, yellow	17
Quercitron, ton	20.00-22.00
Starch, corn, pearl, bbls.	2.35
corn, pearl, bags	2.20-2.40
potato	3½-4
rice	6½-7
wheat	4¾-5¾
Stannate of soda	10-20
Sumac, Sicily, No. 1, ton	
Sicily, No. 2, ton	71-75
Tapioca flour	2½-4
Tin crystals	26-27
Turmeric, Madras	6½-7
Zinc dust	5¾-6



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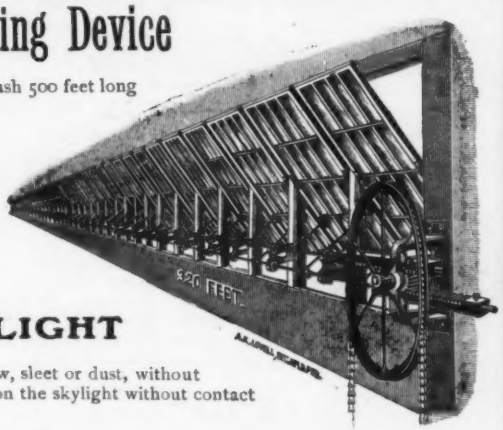

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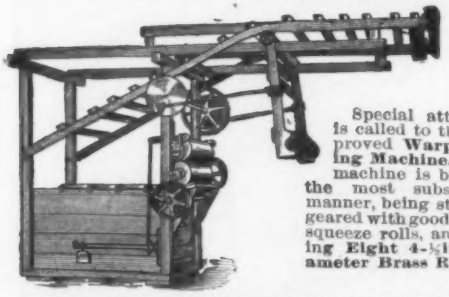

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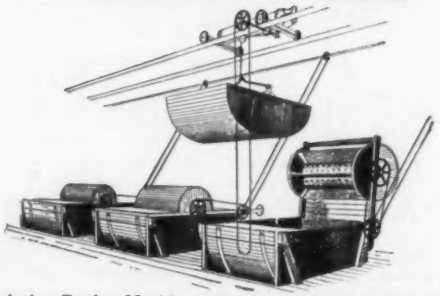

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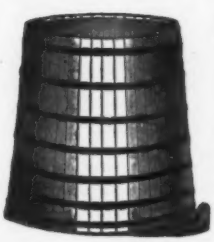

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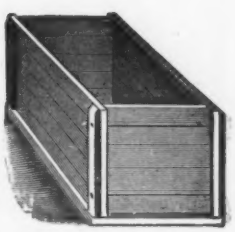

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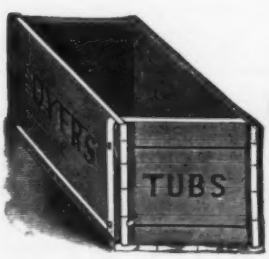

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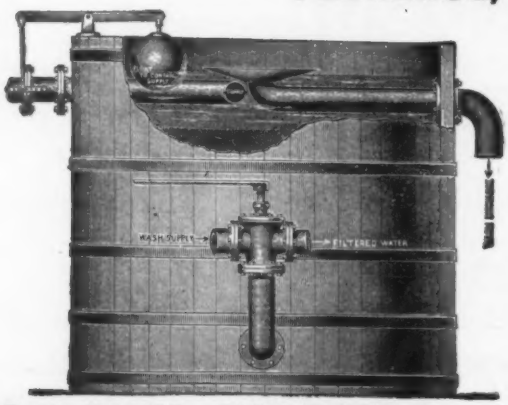

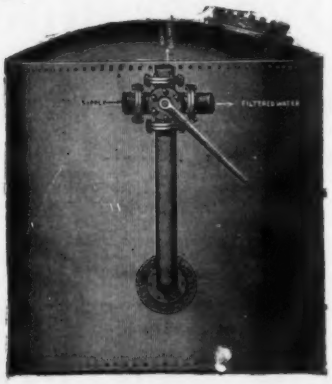

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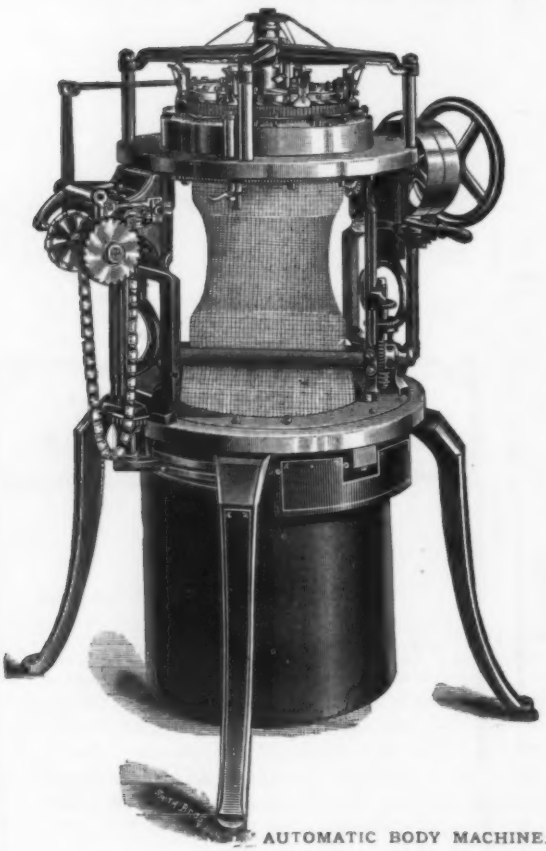

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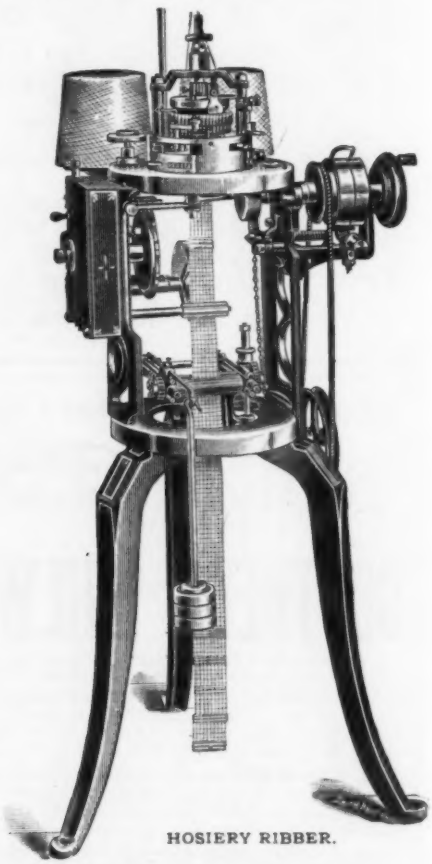

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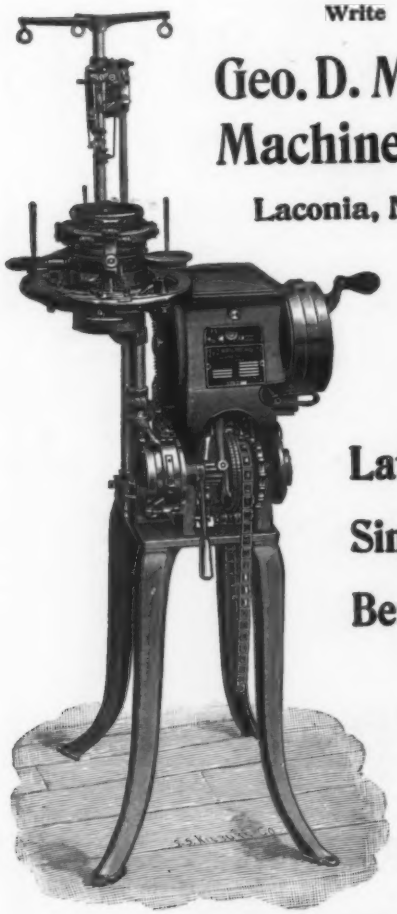

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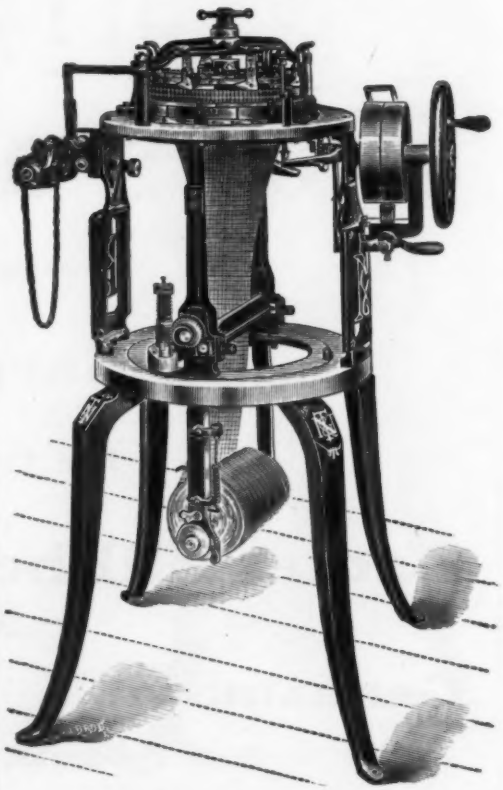


LATEST IMPROVEMENTS
QUALITY OF FABRICS AND PRODUCTION
UNEXCELLED

NYE & TREDICK CO.

606 Arch St., PHILADELPHIA, PA.

Full Fashioned Hosiery Machines

For the manufacture of hosiery in cotton, lisle or silk in all guages, from 14 to 32 needles (spring beard) to the inch, from 12 to 24 sections, built by

Schubert & Salzer

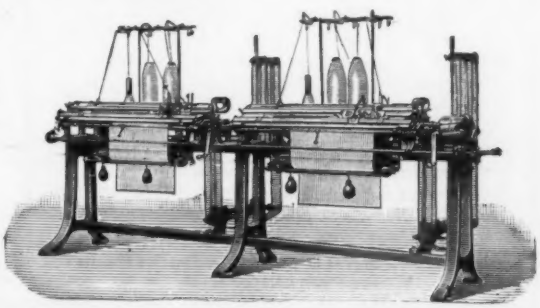
in cotton-system with split, striping, single and double lace attachments.

Also Latch Needle Machines, hand or power motion, built by

Seyfert & Donner

for the manufacture of sweaters, cardigan jackets, ladies' blouses, vests, gloves, etc. The picture represents a full automatic power machine with independent heads.

Catalog on application.



Otto Walther,

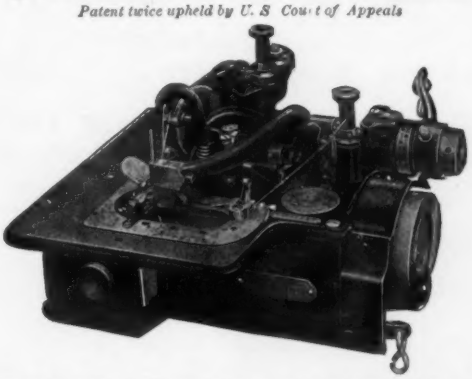
507 Bourse, PHILADELPHIA.

AN INSTRUMENT OF PRECISION!

"OVERLOCK" MACHINE

(Trade Mark) (Pat. April 5, 1892)

Patent twice upheld by U. S Court of Appeals



Trade Mark

Business Established in 1859.

For TRIMMING, SEAMING (or Hemming or Overedging) and COVERING Raw Edges of Knit Underwear and Hosiery in **ONE OPERATION** at **3000 Perfect Stitches per Minute.**

WILLCOX & GIBBS SEWING MACHINE CO.,

General Offices: 658 BROADWAY, cor. BOND STREET,

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LONDON PARIS MILAN DRESDEN BRUSSELS NOTTINGHAM

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ALL KINDS OF NEW AND SECOND HAND **KNITTING MACHINERY**

A RARE OPPORTUNITY TO BUY.

500 Payne bobbins.
1 Bruce band folder and cutter.
1 Weston & Dennis Press, 32x40 in., 15 Hollow Plates.
Lot hosiery stamps, boards, etc.
38 Beattie & Hepworth & Abel loopers.
6 Hosiery presses (lever).
114 Lamb and Grosser sweater machines.
200 Ribbed underwear machines, various sizes.
50 Brinton & Co. ¾ aut. knitters, sizes.
30 Union Special machines, various styles.
1 Rotary fire pump.
1 Buffalo-Blower.
100 feet woven rubber hose, 3 inches dia.
2 paper cutters.
5 Toque machines.
30 Mayo machines. Various sizes.
100 Brooks welters.
8 Fleecing machines. (Nappers.)
98 Brinton & Co. and other make hosiery ribbers.
40-Ribbed shirt machine cylinders and dials, all sizes, cuts and makes.
4 Lindsay & Hyde winders.
2 Grosser Jacquard machines for gloves.
1 Cyclone dryer.
2 Typewriters.
5 Band folding and cutting machines.
1 Centrifugal Pump.
1 Small Steam Pump. 1 Small Belt Pump.
15 Rudolph Sewing Machines
2 Lamb border machines, auto. rack.
1 Payne Cop Winder.
1 Dinsmore Railway Sewing Machine.
20 Leighton Sweater and Underwear Machines.
1 84-in. Double Rib Machine.
1 Crawford Hollow Plate Press.
25 Standard B. Machines.
120 Paxton & O'Neill and Excelsior Knitters.
1 Back gear screw cutting lathe, 5 ft. x 14 in. swing.
1 Newmans watchman's clock, 16 stations.
10 German sweater machines, flat.
Lot of Union Special Sewing Machines.

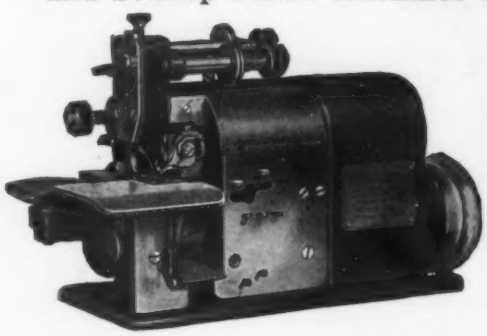
WRITE FOR COMPLETE LIST. APPRAISEMENTS A SPECIALTY.

We are always in the market to buy good second-hand Knitting and Finishing Machinery.

The Merrow

FAST
DURABLE
Light Running

High Speed Overseaming, Overedging and Scallop Stitch Machines are



OUR NEW STYLE 60 MACHINE for Trimming and Overseaming in one Operation produces the strongest, best Seam and does it with the greatest economy.

USE STYLE 18 for Horse Blankets. STYLE 17 or 22 for Bed Blankets. STYLE 35 B SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

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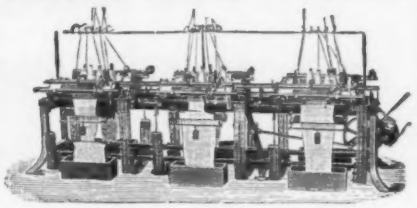
GROSSER Flat Knitting Machines

For HAND power or **Fully Automatic Power Machines.** Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.



COTTON PATENT HOSIERY MACHINES
For automatic production of **Full Fashioned Hosiery, Fine Half Hose, Ladies' Lace Hose, Fine Underwear**; high speed, large production. All guages and any number of sections, from 2 to 24.

FRENCH FRAMES
C. TERROT SÖHNE, Cannstatt, Würt, famous builders of the best Circular Frame for **Finest Underwear, Fleece Linings, Gloves, Special à-jour** (open work) **Fabrics, etc.**

RASHEL MACHINES
For Fancy Goods in largest variety, **Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc.,** in silk, wool, cotton.

SPOOLERS, Paraffiners Finishing Machines, for the knitting business.

Exclusive Agency for the Famous

Julius Koehler DIAMANT OVERSEAMERS, indispensable for all full fashioned articles, **Hosiery,** Gloves, Jersey Sweaters, Sporting Goods, etc.

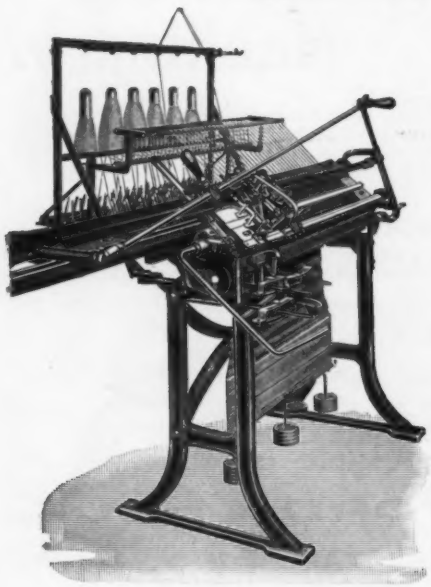
LOOPERS Double thread Lock-stitch, self-cutting and cleaning attachment. Reliable money saver.

FRITZ ZACKE LATCH NEEDLES for any purpose in the knitting line, patented rivets.

Samples, Specifications, Prices, etc., upon application.

WALTER & CO., Limited

Mühlhausen i/Thür, Germany.



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Knitting and Winding Machines

for hand and power driving, of best quality and perfect construction.

Specialty: Jacquard Machines

for hand and power driving for manufacturing of sweaters and every possible fancy article of that nature.

PRICE LISTS AND SAMPLE ON APPLICATION

The Invincible

Full Automatic.

"The KNITTER that KNITS"

THE LARGEST PRODUCER OF PERFECT WORK.
SIMPLE, POSITIVE AND EASY TO OPERATE.

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R. M. OATES, Hendersonville, N. C.,
Southern Representative.

PHILADELPHIA OFFICE,
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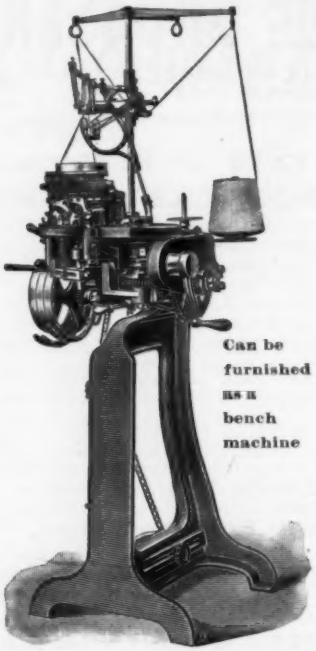
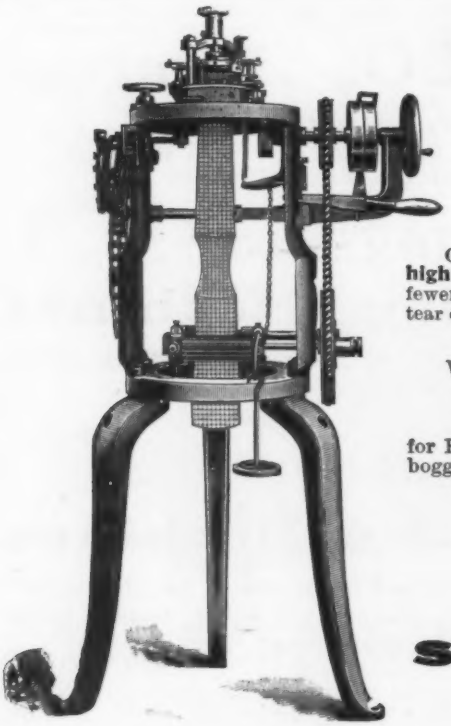


Can be furnished as a bench machine



High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at very high speed, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

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for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

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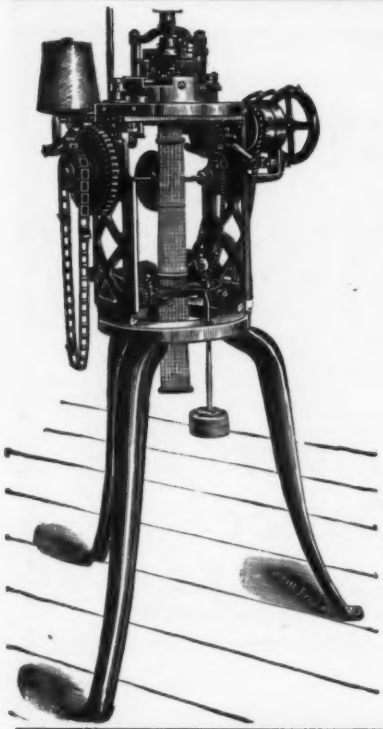

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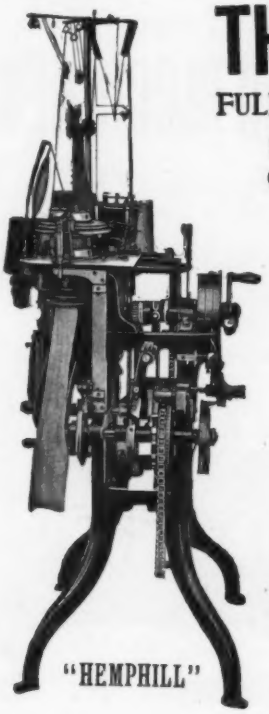
BUILDERS OF

Knitting Machinery

For HOSIERY and UNDERWEAR.

Complete Estimates Furnished. Send for Particulars.

The cut shows our **Improved Automatic Ribber** with Welt and Slack Course for Half Hose, Tops and Ribbed Legs.



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THE TWO LEADERS

FULLY AUTOMATIC HOSIERY KNITTERS

FOR MAKING ALL KINDS AND GAUGES OF SEAMLESS HOSIERY

One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

Both used and approved by leading hosiery manufacturers.

Both contain all the well-known essentials demanded of first-class knitting machines.

With these two machines we can supply all manufacturers' possible wants in the best possible manner.

Write us for further particulars and prices.

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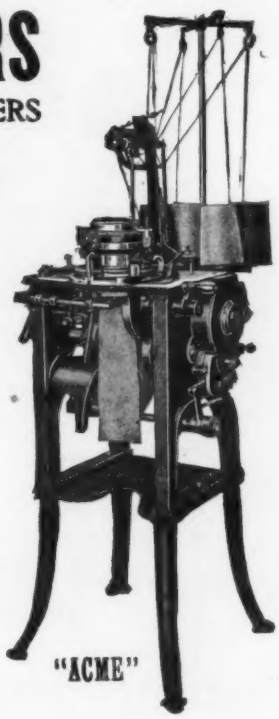

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EXCELSIOR KNITTING MACHINE MFG. CO.

Meadow and Washington Streets

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Full Automatic Knitters

With or without **Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

CIRCULAR KNITTING MACHINES

Either plain or full automatic, with stop motions complete. 4 to 24 feeds for

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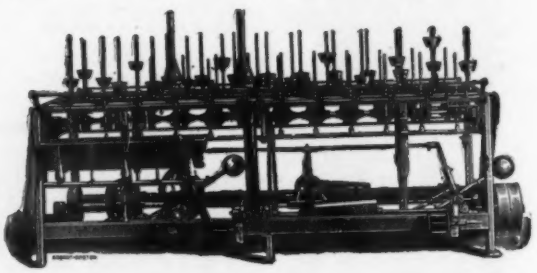
Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



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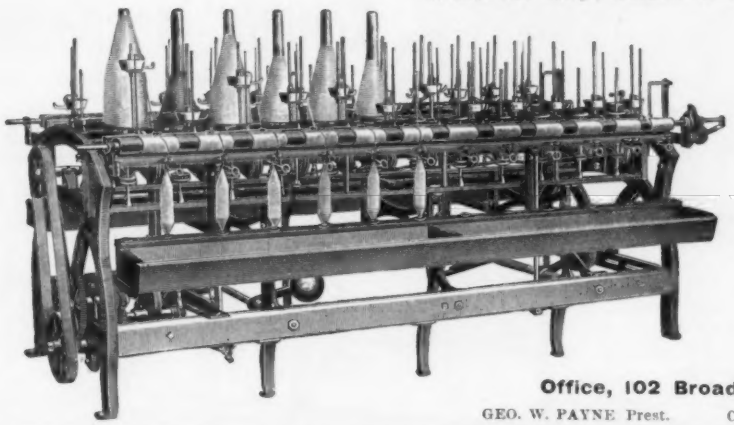
By Hosiery Manufacturers,
Wind for Cop, Skein or Bobbin.



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Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers for doubling 2, 3, or more ends into one.

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

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For Ladies', Gents' and Children's Goods.
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Best Workmanship.

Drying Form Boards

OF EVERY VARIETY.

Patent Loopers

Both single and double Stitch.
with the
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or
Straight Points.

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AMERICAN OVERSTITCH

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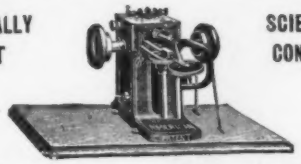

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Unequalled for finishing **Sweaters in One Operation.** Sewing in **Sleeves** with **Loops** on. For **Knit Gloves**, etc.

SAVES TIME—TROUBLE—LABOR

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BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

SOLID SASH AND CURTAIN CORDS,

SHOE AND CORSET LACES, BANDING

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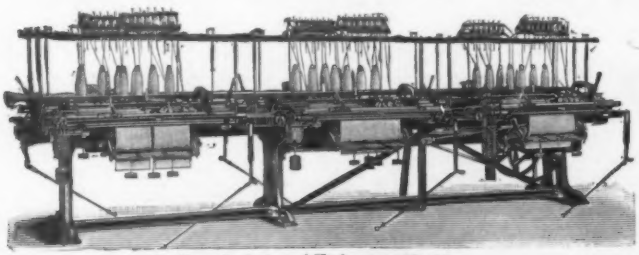

Cardigan Jackets and Underwear Machine.

AUTOMATIC

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For Plain and Fancy Goods.

THE BEST IN THE MARKET!

Special Constructions for different articles!

INDEPENDENT HEADS.

DOUBLE SYSTEM OF LOCKS.

Double-side Power Stands, 6 at once.

Paris, 1900, Gold Medal.

Ask for samples and particulars, state guage and size you want.

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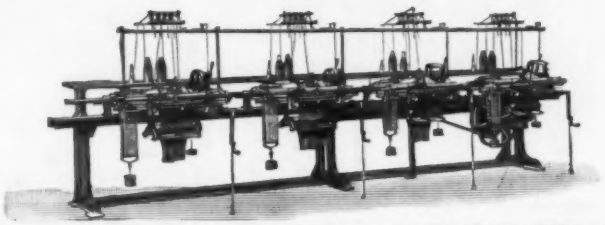
Representatives: Ainslie Knitting Machine Co., Ainslie & Humboldt Sts., Brooklyn, N. Y., where all kinds of hand and power machines can be seen working.



Automatic Widening Machine for Sleeves, Drawers, Garments, Plain and Ribbed.

HEGEMAN SEAMLESS BOBBIN COVER.

The best, cheapest and most satisfactory covering for winder bobbins. Will fit on any style or size.

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SOLE AGENT FOR

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THE PNEUMATIC CONVEYOR

For the handling of wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty. This conveyor is patented. Beware of infringement.

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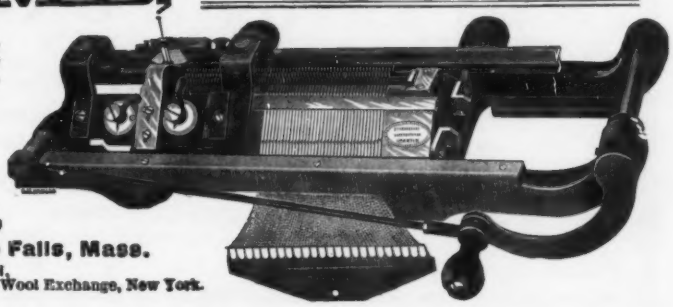
SEAMING MACHINES.



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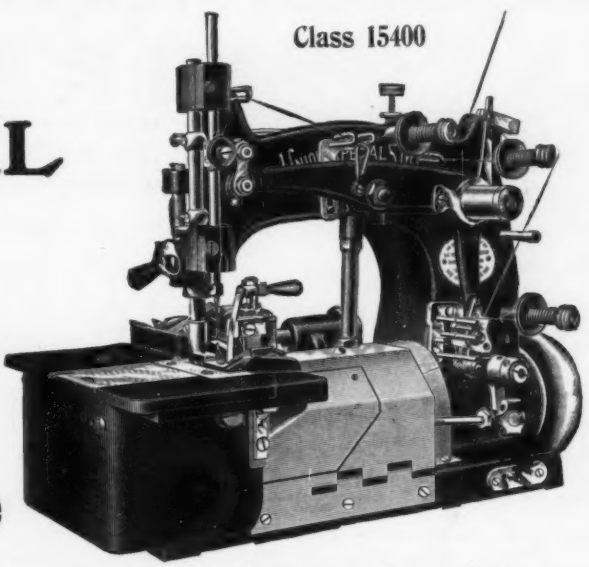
Class 15400



For Overedge Seaming, Hemming, Edge-Finishing and Ornamenting on Fabrics of Every Kind. Two or Three Thread Stitch.

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Full Automatic Knitter

FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.
RANGE ON HALF HOSE AND LADIES FROM 260 NEEDLES DOWN.

3-4 AUTOMATIC KNITTER

With Lace Effects.

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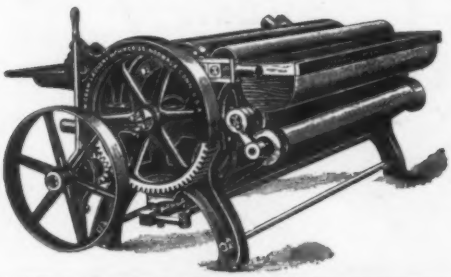
AUTOMATIC IRONING and PRESSING MACHINE for KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine, smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

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Patent Single-Stitch

LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

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Drying Forms.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

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Hosiery Boards.

CHARLES COOPER

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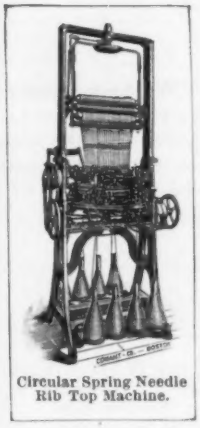
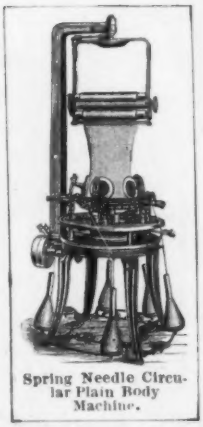


Circular Spring Needle Rib Top Machine.

Knitting Machinery

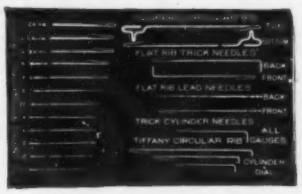
Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder.



Spring Needle Circular Plain Body Machine.

Spring Needle Cylinder Rib-Top Machines

For making Cuffs, Drawer Bottoms and Shirt Borders.



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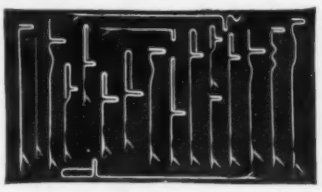
Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, Etc.



Latch Needles.

COLLARETTE ATTACHMENT.

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MOSES MELLOR & SONS, Ltd.,
Nottingham, England.

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C. J. SIBBALD,
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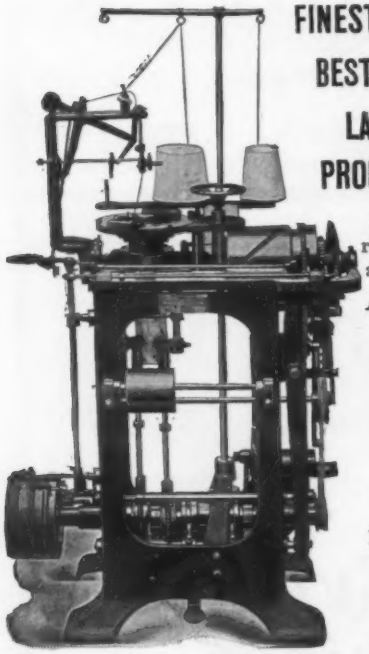
Stands for



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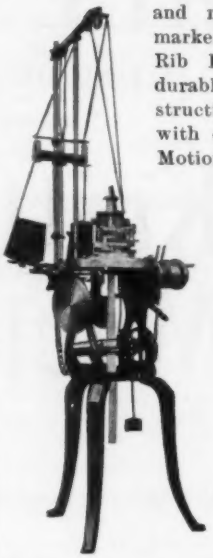
Rib Knitting Machinery is the latest



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We have attained the greatest production with the least menders and needle breakage over all other machines

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The greatest producing and most perfect

Spring Needle Knitting Machine in the World

Manufactured by
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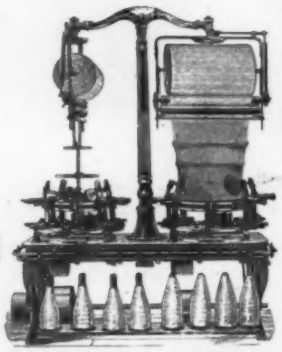

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a line selected from among the best selling papers in foreign markets. Abroad, they have met with exceptional success wherever introduced and our success in handling them is assured at the start by reason of

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Attractive Appearance
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Investigate what *each make of machine will do*, in quality and quantity of product, the cost of repairs, length of life, etc. Such an investigation will show *you* why so many manufacturers

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It is good on the start—and *stays good*

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Do you want to plait?

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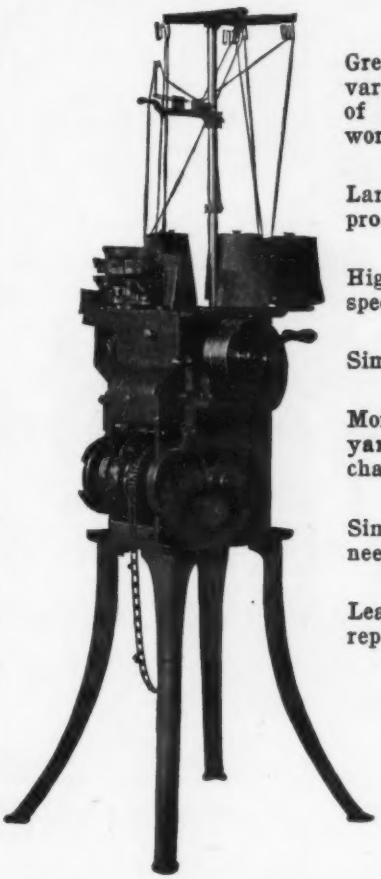
"The Banner"

FULL AUTOMATIC MACHINE.

Specially adapted to Platted Goods.



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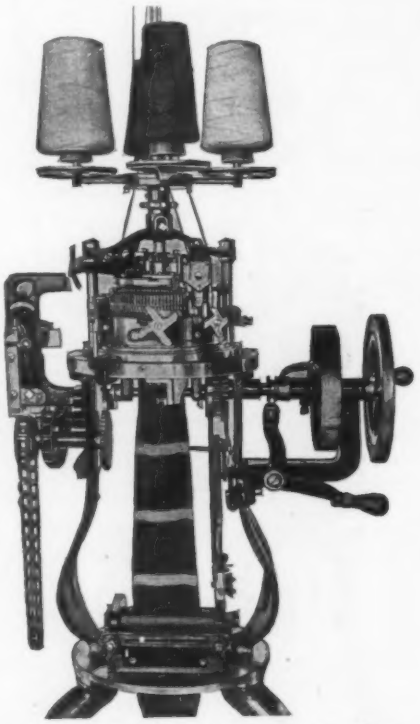
Spring and Latch Needle Machines for both rib and plain work, producing a great variety of fabrics. Patent removable hardened Wing Burr Wheels.



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Our Knit Fabric Cutter

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We also make a Slitter

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Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

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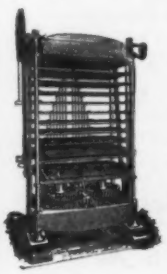

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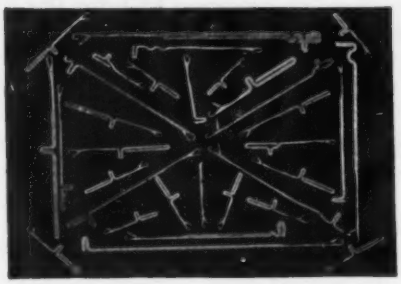
They will save you money.



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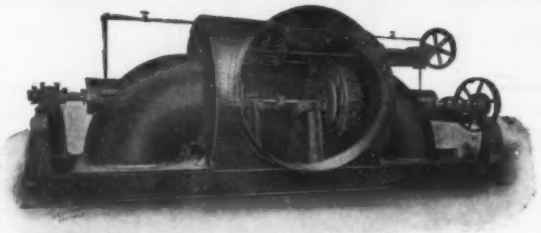

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WILL MEET ANY CONDITIONS.

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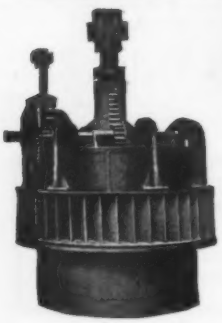

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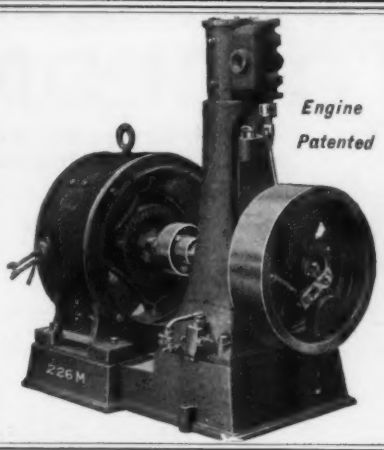

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The "1905" offering no resistance, works closer on fine stock.

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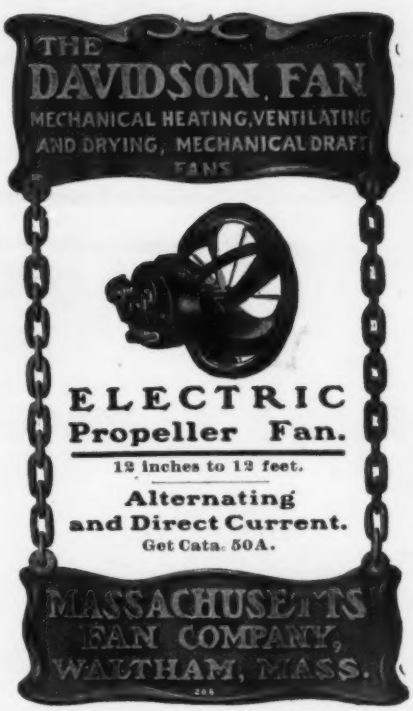

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For Cotton Stock, Wool Stock, Rags, Yarn, Cloth
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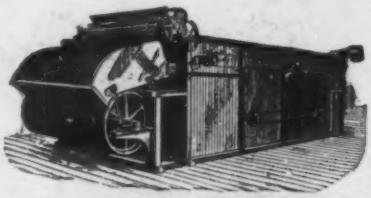
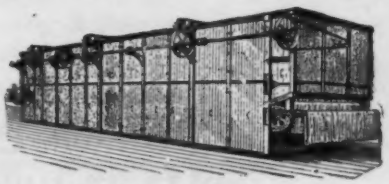


Automatic Cotton or Wool Stock Dryer.



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Iron Bowl Yarn Scouring Machines.

Complete Carbonizing Outfits for Wool, Rags or Cloth.

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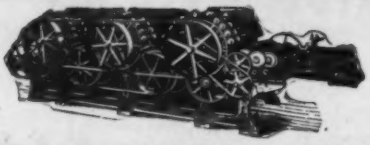

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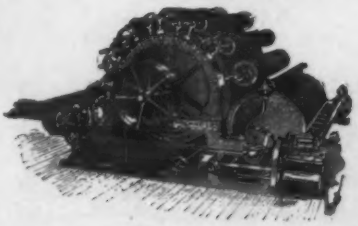
For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



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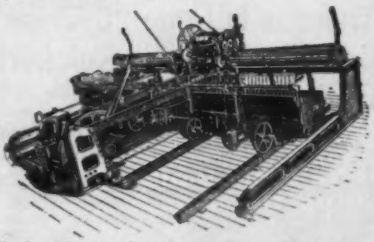

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March 31

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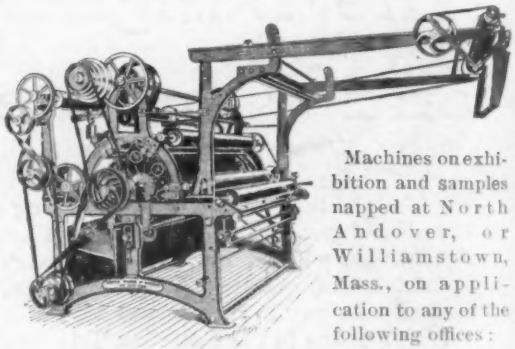

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